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IN THIS ISSUE:

TIDAL MOON

An Interplanetary Story

By STANLEY G. and
HELEN WEINBAUM

THE LOOT OF TIME

A Prehistoric Novelet

By CLIFFORD D. SIMAK

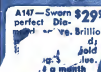


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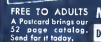
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③ "The lad at the tiller didn't know how to bring the ship about, and although he would wake Larry, they'd be too far away to ever find me in that roaring darkness.

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④ "I pressed the switch. A finger of light stabbed through the storm. Time dragged on as I played the light about me. I cursed my shipmates. 'Why can't the fools see my light?' and then...the beam caught the white sail! I screamed for joy. An arm waved encouragement. Minutes later, thanks to those *fresh* DATED 'Eveready' batteries that kept working under the toughest conditions imaginable, I was warm and happy in my own bunk on my own ship, our Block Island cruise resumed.

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Tom Meyer



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THRILLING WONDER STORIES



VOL. XII NO. 3

The Magazine of Prophetic Fiction

December, 1938

IN THE
NEXT ISSUE

THE TELEPATHIC TOMB

A Novelet of Secret
Forces

By
**FREDERICK ARNOLD
KUMMER, JR.**

THE HUMAN EQUATION

A Novelet of
Super-Evolution

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MAX SHERIDAN

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ARTHUR J. BURKS

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usual stories, novelets
and features.

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• ON THE COVER

The cover painting depicts a scene from **HANDS ACROSS THE VOID**, a short story by Will Garth which appears in this issue.

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Advance proofs of Stanley G. Weinbaum's longest work, **THE BLACK FLAME**, which will appear in January **STARTLING STORIES**, were submitted to several science fiction authorities for an opinion. Here are their reports:

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H. W. WESSO: "The suspense is terrific. The story will live with me for years."

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HENRY KUTTNER: "I READ **BLACK FLAME** LAST NIGHT STOP I'M REREADING IT TODAY STOP."

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TOM SAID "NO"
HE'S STILL WAITING FOR "LUCK"



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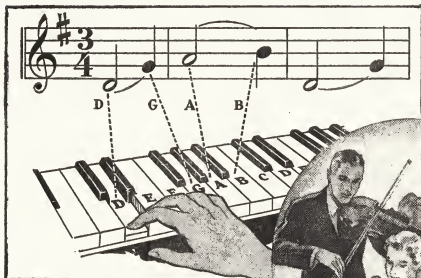
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The Story Behind the Story

REGARDLESS of motive, by and large, hard work is the price of invention. An idea may come in a flash, but to reduce that idea to workable form is another matter.

"Inventing," said Edison, "is the hardest kind of work, and requires intense application of every faculty."

Similar is the experience of narrative creation. An author is comparable to an inventor—both work from original ideas. The author moulds ideas with his mind; the inventor with his hands. Man makes inventions, asleep or awake, thus proving his instinctive inventive nature. The common process of making shot by letting molten drops of lead fall from a tower to a bed of water below was developed by a man who once dreamed it was raining. Likewise many an author has taken some situation experienced in a dream and realized its dramatic value. But writing or inventing—they're both tough work!

THE RISS-WURM PERIOD

THE LOOT OF TIME, by Clifford D. Simak, is an intriguing story of past, present and future. It took plenty of elbow-grease and mental magic to work the theme out plausibly, we are certain, but after reading the resulting story we think the job was worth the effort. It's new science fiction stuff . . . and some day we hope Mr. Simak can explain what the Centaursians hoped to accomplish with their treasure-trove. Here's what the author has to say regarding the genesis of his narrative:

THE LOOT OF TIME came to be written as the result of two ideas. The first was that most great happenings are not always endowed with the dramatics which they are later accorded. From this belief grew the idea that time-travel, when it is solved, may not be used for the great and noble purposes which one might conjure up. Probably it would be used for just such a casual excursion as the story sets forth . . . going back to the Riss-Wurm period for a day or two of shooting.

The second idea was developed many years ago when as a snail boy, I tramped the southwestern Wisconsin hills hunting squirrels. The idea has recurred again and again . . . while whipping trout streams in northern Michigan, while out after pike on northern Minnesota lakes, while riding the prairies of western North Dakota, while trying for catfish down in Missouri.

It is simply this: What wonderful sport a hunter or fisherman would have if the years could be rolled back to the days before the white man came, when a virtual hunter's paradise existed in North America. Carrying the idea a few steps farther, the heroes of **Time Loot** go back to the Riss-Wurm period.

As a matter of fact, the Riss-Wurm probably would have provided the best shooting the world has ever known. But big guns and plenty of courage would be needed!

While I am not certain, I believe that the **Time-Brain** is a new idea in time-travel methods. The usual objection to time travel is

pretty well stated by Cabot early in the story when he claims that purely subjective time would offer no theatre for mechanical operation. But granting the time-travel objectors their contention that one couldn't travel in time because it is subjective, the Time-Brain turns the trick.

Old One-Eye probably is fairly representative of the Neanderthals. Not too bright, with plenty of strength but not too much muscular coordination, with the overwhelming curiosity which marked dawning intelligence, the Stone Age man more than likely was not the ferocious killer he is so often pictured.

His life span probably was short, for he was heir to many diseases, he suffered from sudden climatic changes with none too adequate shelter and he lived in a world of sudden and never-ending violence.

Look at the situation from every angle and the Riss-Wurm period, while it may be all right to read about, undoubtedly wouldn't have been so desirable as a place of residence.

THE ANATOMICAL JIGSAW

Aside from offering an opportunity for Tony Quade to sling some caustic wisecracks regarding the Bring'em-back-alive damsel, Gerry Carlyle, Henry Kuttner's latest novelet, **THE STAR PARADE**, presents some original conceptions of interplanetary life forms. Jigsaw—science fiction's newest creation—may sound pretty hard to swallow. But we're preparing you here, and Mr. Kuttner warns you in advance via his following sales-talk:

Mr. Jones walked into his dentist's office. "Doctor," he said, "I've an awful toothache. It's driving me insane!"

Dr. Brown nodded sympathetically. "That one?" The lower left canine? All right; just leave your jaw and I'll get to work on the tooth right away."

Jones carefully unhooked his lower jaw and gave it to the dentist, who laid it on a shelf beside the disembodied jaws of other patients. . . .

How would you like to be able to do that whenever you got a toothache? No more probing and drilling; no more novocaine or ether; it'd be just a matter of leaving your jaw, like a spare tire, to be repaired. The idea was sheer wish-fulfillment, for I was sitting in my dentist's office, gloomily eying the drill and wishing I possessed whalebone instead of teeth. A man built on the order of one of those anatomical models you see in schoolrooms, I thought, would live a happier life. When his appendix or liver went haywire, he could simply remove the offending organ, mail it to a doctor, and presently get it back repaired and healthy.

I wouldn't advise anybody to try the experiment. Our bodies just aren't built that way, said to say. But, scientifically and logically, there is no reason why a creature such as Jigsaw, in **THE STAR PARADE**, should not be able to exist.

If your hand is cut off it dies swiftly. The neural and circulatory connections are severed. But, in the human body, the nerve impulse actually has to leap a tiny gap—the synapse—and why shouldn't that impulse be able to leap a much larger one? Oxygenation of the blood is a different matter; the lungs play an important part here, and our perambulatory hand would have to return to its parent body periodically for refueling. Provided these two requirements are met, you have the possibility of such a creature as Jigsaw. And the conditions of the Martian forest naturally favor "disarticulated evolution."

Ask anybody who's been there! As for Pleasoo, there isn't any perfectly camouflaged animal, of course, but the ultimate in protective coloration would result in a practically invisible being. Remembering

(Continued on page 124)



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HANDS ACROSS the VOID

The World of Titan Was So
Advanced in Scientific
Achievement that
Even Space Ships
Were Obsolete!

By
WILL GARTH

*Author of "The Great Illusion," "Rays of
Blindness," etc.*

IN the summit of Titan's highest mountain was the glittering metal observatory where Glathnor spent much of his time. Through the thick chlorine-impregnated atmosphere only the chill splendor of Saturn blazed gloriously, a cosmic jewel of wonder for the children of the satellite to gaze upon—as the children of the Earth gazed upon the moon.

Astronomy was an old science to the Titans; even space navigation was obsolete—for good reasons. Nevertheless, Glathnor spent most of his time studying the planets of the Solar System. With the special lenses and electronic rays of Titan telescopes, devel-



*Man and ant
were in a death-
struggle*

oped because of the heavy, green atmosphere, Glathnor watched the Sun swinging on in the great galactic drift, studied each planet and charted its course through the years.

Especially did he study the planet Earth through his great telescope. To him there was a curiously poignant fascination about that silvery green world floating so far away in the void. And that pull, Glathnor knew, was common origin of life ancestry. Titan science had proved that thousands of years ago. In fact, Glathnor knew all of the history of all the planets as the great libraries of Titan had recorded it.

Glathnor was a man such as no dweller on Earth had seen for more than

ten thousand years. In general outline there was little difference, but a man of Titan had lungs that breathed chlorine instead of oxygen, flesh with more of the pallor of marble than warm and blood-tinted. And the eyes were vastly different. A Titan's eyes were many-faceted, and could perceive beyond the threshold of ultra-violet and infra-red. Even the life cycle was thrice that of Earthlings.

Life evolution on Titan was old, measured by man's clumsy invention of that intangible essence he called time. Tonight, as Glathnor stood quietly on the observatory balcony overlooking a gulf that fell away thousands of feet through the jagged crags to the floor of a Titanian valley, a great idea and urge came to him. Helas, a fellow astronomer, came to stand beside him, a question in his gray-white face.

"You watch Earth again?" Helas asked. "But then you always do. What is there about that little planet which fascinates you so, Glathnor?"

Glathnor did not immediately answer. Helas went on.

"Is it because of the basic tie of kindred life—carbonaceous organisms that exist nowhere else in our System save on these two worlds?"

Glathnor sighed. "Isn't that thought enough to give you pause, Helas! Even the marshes and seas of Venus have not so much as microscopic spores of life like ours. The igneous plains of Mercury's surface remain barren of animate life."

"True." Helas nodded. "But Mars once had its inhabitants."

"Ten thousand years ago our ancestors went there," Glathnor said. "They found ruins. Crumbling cities and inscriptions on rose-marble walls—"

"Well, those inscriptions saved Titan, Glathnor. They gave us the clue to the plague that had wiped out the Martians. That was the only thing that saved us when space expeditions brought back the virus with them."

A WRY smile touched the Titan's lips. In the Archives he had seen photographic records of the centuries

in which the scanty remnants of a mighty civilization had battled desperately to remain alive. Only after three hundred years did the Titans succeed in destroying the virus, and then they were faced with the prospect of rebuilding a world.

It took not years nor generations, but many centuries. In that time something had been lost; a change had taken place in the Titans' minds. They were no longer touched by the transfiguring fires of wonder; no more did they watch the stars and question what lay beyond. Travel outside the Solar System was impossible, and the System itself had been explored. Any Titan who felt the tug of curiosity could easily satisfy himself at the Archives.

Glancing sideward at his companion, Glathnor felt an amusement that was not wholly free from sorrow. What could he say that the other man might understand? Of what use to speak of the long days spent in the Archives watching three-dimensional, naturally-colored films of Earth, taken ten thousand years before when the Titans had explored the System.

Earthmen had reached the summit of their evolution then, in 2100 A. D., terrestrial calendar, and their cities dotted the continents. But Glathnor preferred to watch other things: the delicate flame of dawn brightening over a green and forested plain, or the hot, angry sunset upon the oceans of Earth. Cities were not new to him, for on Titan mighty metropolises have towered since earliest times, carved out of the bleak, rocky surface of the satellite by Herculean efforts.

The saga of Titan is one of heroes, men mighty and harsh as their own grim world; it can be painted in strong oils or engraved in steel. But for the soft glow of pastels one looks in vain; on Earth, and Earth alone, can one find escape from the primordial savagery spawned in the interstellar abysses and let loose on the world.

To an Earthman Glathnor would have seemed weirdly strange, though much more familiar than anything else on Titan. The Cyclopean architecture of that world has a beauty of its own, but one almost terrifying in its impli-

cation. In the colossal rise of the great towers, and in the sweep of the metallic ramps and levels one senses a relentless strength, the attitude of a race that has battled a hostile universe, and stands grimly awaiting new menace.

Cities reflect the souls and minds of the builders, but living flesh is bound by more conventional shackles. And on both Earth and Titan life had sprung from identical spores that had drifted for ages, borne through the void by the pressure of light. So, through the millenniums, evolution has followed its course on both worlds, though adaptation to environment had played its part. A Titan can breathe his chlorinated atmosphere without discomfort, where an Earthman would die swiftly and in agony.

Now, looking up at the stars, an overwhelming longing shook the Titan's heavy, muscular body. It was, perhaps, strange to find a dreamer's mind in the brute body of this being—a man who might have sprung from the loins of the ancient Earth-god Vulcan. But only an immensely resistant physique could have existed on Titan in the old days when the race had fought the passionless savagery of its environment, and the heritage had come down through the generations.

FEW Titans were content to remain always in the artificially-heated cities. There was something deep within them that could only be satisfied by striding through the frigid blasts and drifted snow outside; great-thewed shadows towering against the night, filled with an inexplicable, primitive exultation as they matched their bodies against a cold hell.

The idea came to Glathnor suddenly. His companion had mentioned the ancient interplanetary expeditions. Well—why could not he himself set out across space and see with his own eyes the world that had become dearer than his own? True, no space ship existed on Titan, but there was no reason why one could not be built.

Without a word Glathnor turned and left the astronomer. Only one man on Titan could give him the aid he sought. And so, within a few hours, Glathnor

faced the administrator in a vaulted, huge hall oddly reminiscent of the Gothic, and equally lacking in human warmth. The administrator listened, no hint of expression in his cold, faceted eyes, and at last he spoke, in a voice so soft as to be incongruous with his blacksmith's body.

"This is your right, Glathnor. As long as your wishes interfere with the happiness of no other man, you may do as you will. A space ship can be constructed, though for thousands of years we have felt no need of such a vessel. We shall take precautions against danger. There will be peril on Earth, naturally. You cannot breathe the oxygenated atmosphere. Yet you will not be at peace until you have made the journey. That I see."

"I am tired of Titan," Glathnor said. "I am, perhaps, a mutant. An anachronism—"

"You have stayed too long in the Archives. Earth is a weakling's planet."

"Weaklings, perhaps. But their dangers are as deadly to them as ours were to us. I think I am a little tired of—strength."

"You seek beauty?" the administrator asked quietly. "You find no beauty on Titan?"

"The beauty of power and strength. Yes. But I have seen something far different in the Archives. I have seen a room, softly tapestried and brightened by the flickering glow of firelight . . . we have no fires on Titan. There is only the beauty of a jewel, and of metal cities. Green plains and forests, mists hanging over swampy spaces—even the sky is different there."

"You may find Earth changed," the administrator warned. "Nearly ten thousand terrestrial years have passed since we went there."

No human could have seen a change of expression on Glathnor's face, but the administrator read there a somber apprehension.

"True. But that only draws me more powerfully. We of Titan are older than Earthmen, and stronger. I have studied and analyzed the data in the Archives, and I read there a certain warning. Have you ever seen those tiny, chitin-

covered insects that made their nests beneath Earth's surface? Creatures with segmented bodies, strong mandibles, and antenna for telepathic communication?"

"No. What of them?"

GLATHNOR drew a deep breath. "I saw death in them. Death for the human race on Earth. In those insects lie the seeds of power, an emotionless and relentless capacity for intelligence that can easily develop. In ten thousand years that development may have taken place. If Earthmen kept pace, well and good. But we, too, had our eclipse after the Martian plague. I believe that a war between humans and these insects is inevitable—it may have already occurred."

"Earthmen had no suspicion of this?"

"None. Several specimens were brought back to Titan. They died, however, and their brains were probed with the thought-readers. The results are in the Archives; I have studied them. When we visited Earth mankind had no conception of the menace of these insects."

The administrator closed his eyes. "Well?"

Glatthnor hesitated. How could he explain the strange, indefinable bonds that held him to Earth, that made him feel a kinship for an alien race across the void? What could the men of Titan understand of this attitude toward—weaklings?

Yet he said, "If I find that the insects have become a threat to terrestrial beings, I believe we should destroy them."

The administrator stared up into the shadowed vaults of the hall's roof.

"All are satisfied on Titan. Why seek change? Yet—yet—there would be war again. We could test our strength against these insects. If indeed they have attained the intelligence you suggest. By the Suns!" the Titan whispered. "To wage war again! To feel the glory of fighting as we fought ages ago! I am of a mind to agree, Glatthnor—"

"You will, then?"

"Glatthnor," the other said gently. "I

must rule a world. And sometimes it is not easy for me to know the best course. My people must have happiness. I think we have attained that. You are the first Titan in thousands of years who has felt discontent."

"Then why do men leave the cities to war with the snows? They could not tell you, except that they feel a hunger inside that cannot be satisfied by the life they live. Something is lacking—and I do not think it is war. It is something that exists only on Earth."

"We have gone far into science, but the souls of men we cannot probe. I cannot understand your feelings, Glatthnor, but when you speak of Earth and I feel the vibrations of your emotion, there is a question in my mind that I have never felt before. I do not think I would like Earth. I do not think any Titan would. But I shall do this for you, Glatthnor: you may have a space ship built, and you may go to Earth."

"Learn what conditions exist there. You must return, for no signals will penetrate beyond the barriers above the atmosphere. Bring back proofs, and if the human race on Earth is in danger, we of Titan shall remove that peril. But I will not risk the happiness of my people on an idea of yours, an idea I think is mad. Bring back proofs, or I shall do nothing. I am conceding much as it is, balancing the welfare of a planet against your theories."

"My theories—and my dreams," Glatthnor said.

"Dreams?" the administrator questioned. "Dreams? What are they?"

A few months later Glatthnor's automatically-controlled space ship fled Sunward through the inconceivable emptiness of space. Saturn and its moons grew small and pale, and the monstrous bulk of Jupiter loomed in its immensity, and then receded among the stars.

Through the asteroid belt, past the orbit of Mars, and toward Earth flashed the vessel, Glatthnor resting quietly in a pneumatic cradle within, cataleptic and scarcely breathing. Robot apparatus took hold as the presence of an atmosphere signaled the nearness of

Earth. Thus, for the first time in ten thousand years, an interplanetary voyage was completed. . . .

IN Earth, Rondar of Hawk Valley sheathed his thermal pistol and grinned happily. A dozen yards away lay the convulsively twitching carcass of a tigrion, striped body twitching, tusks gleaming in the sunlight. The baleful green eyes glared at Rondar; and then glazed as the powerful form stiffened and suddenly went limp.

The speed, ferocity, and immense cunning of the tigrion made it dangerous indeed, and generally it took a dozen men, armed with thermal guns, to subdue the creature. Only Rondar's accuracy in probing a vital spot with the narrow focal beam of the weapon had saved him from death.

Of course, it would have been easy to have escaped and summoned aid. The silver whistle that hung at Rondar's throat would have served to bring one of the great ants racing at express-train speed across the great plain.

But Rondar was young; the pulse of courage was strong within him, and now his triumph over the tigrion was almost intoxicatingly pleasant. It was good to be alive, he thought. True, life was becoming almost too easy with the great ants as servants, but one could always go on a hunting expedition into the forests. Or spend a pleasant day in the libraries, though lately the records had become oddly depleted.

The most significant books had disappeared without trace—particularly volumes of science, and those dealing with practical warfare. Rondar wasn't sure whether anyone knew today how to make the thermal pistols. They were antiques, losing their efficacy.

It didn't matter. One could always turn to the ants in time of need. Passionless, sexless machines, they were coldly efficient, so much so that a less hardy race than Earthmen would have relapsed into decadence under their attentions. In fact, a subtle degeneration had begun, especially among the scientists. The ants were so much more efficient—and tireless—that biologists,

physicists, chemists, and the others were more and more content to delegate their work to the giant insects.

Sometimes Rondar wondered what went on in the minds of the ants. They lived in a secret, mysterious world of their own, a city far underground, emerging at need to aid the humans on Earth's surface. And their actions were often inexplicable, so much so that if man had not been allied to the ants for thousands of years friction would have been inevitable.

Rondar looked up at the sound of a hissing rush of displaced air. Something was descending, perhaps a mile away, a square block of black metal. It dropped into the forest out of sight.

Under the circumstances, there was only one thing to do. Rondar thought briefly of summoning an ant, but dismissed the impulse. He plunged into the forest, his woodsmanship easily enabling him to keep his direction.

So the Earthman came in view of the space ship as Glathnor emerged, a bulky, weirdly alien figure in his protective suit. A chill of superstitious fear shook Rondar.

In face and form Glathnor was not totally unlike an Earthman, but there were subtle differences. His flesh seemed made of pale marble, harsh and strong and powerful in its chiseled grimness. From the faceted eyes two beams of light crept out, rays scarcely visible in Titan's atmosphere, but made startlingly brilliant by refraction with the dust-notes and invisible particles suspended in the air of Earth.

AGUN, based on an electric principle, hung at Glathnor's side, but he made no move to use it. In the Titan's mind a little breath of laughter rose; his colleagues had taken so many precautions! He glanced at a metallic ring on his finger, a ring in which a tiny chip of radioactive substance was set. What had the administrator said?

"When you leave your ship, a barrier of invisible force will automatically be created to guard the port. With this ring you can enter the ship, but no other creature can do so. And, since

you may be wounded or weak, you will not need to guide the ship back to Titan. The moment you enter the ship, the robots will rechlorinate the atmosphere, close the port, and bring the space ship home."

The administrator had been cautious, and at his command a robot had been built, an efficient, metallic machine that resembled Glathnor in every way, even to the twin beams of light glaring from the faceted eyes, even to a duplicate of the Titan's space-suit.

"You will remain safely in the ship," the administrator explained. "Send out the robot to explore this alien world. It has sufficient intelligence to obey simple orders you may give it; and, with the devices within the ship, you can control the robot with precision by beam energy. When you are certain there is no danger, recall the robot and take its place yourself, if you wish. Since it resembles you in every way, no Earthman will guess the trick or suspect that we feared danger."

Perhaps Glathnor had at first intended to obey, but by the time the space ship reached its destination, the Titan knew that he could not remain prisoned in the vessel and send a robot out in his place. So he emerged alone, and saw Rondar, man of Earth.

A diaphragm in Glathnor's helmet vibrated to the deep thunder of his voice. Startled, the Earthman drew back. He made unintelligible sounds.

"Naturally he cannot understand me," Glathnor thought. "I learned English in the Archives. But in ten thousand years the language has changed entirely. Perhaps telepathy—"

On Titan telepathic communication was seldom used, since the strain on the minds en rapport was severe. Nevertheless Glathnor projected a message at the other. There was no response. The Earthman's brain was not fitted for telepathic understanding, apparently.

The two stood silent for a time, each wondering and puzzling. At last Rondar pointed, and made a beckoning gesture. His meaning was plain, and Glathnor followed the Earthman through the green forest.

THE ground rose steadily. In ten minutes they stood on a high, windswept plain, from which the black cube of the space ship could be seen below. A queer, poignant happiness was deep within the Titan as he stared around at the broad expanse of Hawk Valley, a golden, sunlit land ringed by snow-white peaks in three directions. Toward the west lay the ocean, sapphire-blue, sparkling on the horizon. From Glathnor's feet the ground fell away to the gleaming spires and domes of a mighty city in the far distance.

Rondar touched the Titan's metal-sheathed arm. His face was questioning. And Glathnor, knowing the impossibility of communication as yet, swept out his hand in a wide gesture. Rondar's gaze followed the motion; perhaps he understood something of the other's feelings. His eyes met the Titan's, and a curious spark of comradeship kindled between the two men.

They went on toward the city. As they approached, Glathnor noticed great mounds, featureless save for black tunnel-mouths, growing more numerous on the plain. A flicker of movement attracted his attention. A man, astride a giant, hideous insect, was racing toward them.

Glathnor recognized that insect. He had seen miniature replicas of it in the Archives on Titan; the tiny, chitinous creatures in which he had read the seeds of doom. A doubt came to him. The insects were subjugated, seemingly, steeds of the Earthmen. Had he been wrong?

The rider halted before the two men. In a language unintelligible to Glathnor he questioned Rondar. There was a cryptic exchange of comment. The Titan, however, was watching the giant ant. Its passionless, glittering eyes were intent upon him; the thing stood motionless as a statue. Abruptly its mandibles quivered, snapped, and a metallic series of clickings and raspings sounded.

A language, unquestionably—and one which the Earthmen understood. They listened, and on Rondar's face a doubting question grew. He answered the ant in clicking consonants.

The insect spoke again, peremp-

torily. Rondar's brows came together. He pointed at the Titan, shook his head stubbornly, and, Glathnor thought, argued. But the other Earthman joined his arguments to those of the ant, and presently Rondar, shrugging wryly, turned to the Titan. Some message seemed to be in his gaze, but what it was Glathnor could not understand.

The Earthman began to hurry toward the distant city. The ant's rider drew his weapon and gestured to one of the nearby mounds. Glathnor obeyed the unspoken command.

Why not? Armed, the child of a race of giants, he felt no fear. And it was necessary to learn what conditions existed on Earth. So he preceded the man and the ant toward one of the black tunnel-mouths at the foot of a towering knoll, and entered it.

He realized that subtle thought-vibrations stirred in the air all about him. Inexplicable ideas came to him. For example, he felt oddly certain that the Earthman had intended to remove his captive's electric gun, but that the ant had forbidden it. Suddenly Glathnor decided that the insects were telepaths.

The tunnel slanted down sharply. There was an abrupt turn, another long descent, and then a cavern lay before the three. It was of bare rock, empty save for a dozen huge ants. From other passages more insects came hurrying, until scores of them were lined in regular rows, facing Glathnor.

CHITINOUS mandibles clicked a command. The guarding Earthman turned and vanished into the depths of the tunnel. The Titan was alone among the great insects. A very vague glow pervaded the cavern, but to Glathnor's alien eyes every inch of it was clearly visible. He became conscious of a thought striving to reach his mind.

He threw open the barriers of his consciousness. Suddenly, with a breath of relief, he realized that though the ants utilized telepathy, their minds were undeveloped as compared with the Titans. No man of Titan can read another's mind unless the subject is willing. But Glathnor read the secret thoughts of the ants—and a black and terrible rage sprang up within him.

This was not the civilization of the insects, not this bare and chilly nest far underground. Beneath it, at a depth to which Earthmen had never penetrated, lay a vast kingdom of science. There the ants had their secret life, hiding it always from Earthmen. Thought-pictures flashed through Glathnor's brain, unwittingly revealed by the ants.

An insect raced forward on its multiple legs, mandibles clicking. It paused before Glathnor. Its mind sent forth a question.

"Who are you? From what world do you come?"

A shudder shook the serried ranks of the ants. From Glathnor's brain a tele-

[Turn page]



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pathic wave had leaped, battering down the insect's defenses, probing mercilessly, questioning, tearing out the answers from the secret abysses of the monster's consciousness. Taken by surprise, the ant had no defense. And swiftly Glathnor questioned, swiftly he demanded his answers, for he knew that he had little time.

"What is this Day of Killing I read in the minds of all of you?"

Unwillingly came the ant's response:

"The day when we shall arise and wipe out mankind."

"When do you plan this?"

Of the time-period in the insects' thoughts Glathnor could make nothing. He repeated the question more forcibly.

"It will be soon—soon!" came the answer.

"Does humanity know of your plan? Tell me of this!"

The hordes of monsters surged forward, swung back on the pulse of Glathnor's thought-command. The answer came.

"Men know nothing. We are their servants. So they think. For ages upon ages intelligence has developed in the ants. Even when we were tiny beings that could be crushed underfoot. We planned, then, for the future. We determined to wipe out humans. There is room for but one ruling race on a planet. So we made our plan."

Glathnor's thought-control was breaking. He sent the mighty vibrations of his mind smashing into the ant's brain.

"What was this plan? Tell me!"

"We . . . we were small. If we had risen then, mankind would have crushed us. So we made ourselves servants. We aided humans, we bred ourselves larger and larger, slowly growing in size through the ages. To keep men from annihilating us, from seeing danger in our growth, we served them. We worked for them; we were their slaves. Their allies, they think.

"We aided them to conquer other forms of life. And then, when man finally trusted us completely, we set out to rob humanity of its power. Their leaders were killed secretly. Their strongest weapons, their books of

power and science—we took. They suspect nothing. They have grown to depend on us completely. They do not realize that we have taken all that enabled man to conquer Earth. So, when the Day of Killing comes, we shall easily destroy humanity. Some we shall save and breed for food."

THE thought-thread broke. The ants had at last mastered the alien vibration of the Titan's mind, and were able to throw up mental barriers. Glathnor realized this. His hand went stealthily to the electric gun at his side.

The insect whose brain the Titan had read stilled the rising clamor of clicking mandibles. He sent a telepathic message to Glathnor:

"You have learned much from us. It will not help you. A little—a very little—I read in your mind, man of Titan. I know you seek to aid Earthmen. But you forget you cannot communicate with them until you learn their language—and they trust us."

"Already our messengers are on their way to the City. They shall tell Earthmen that you are a scout from another world, a spy sent to investigate this planet in advance of a horde of your fellows who plan to conquer Earth and enslave Earthmen."

"They will not believe you," Glathnor responded, but he was far from sure.

"They will believe. Why should they not? They trust us, man of Titan. And Earthmen fear the unknown. To them, you are the unknown, an alien being come out of the mystery of space. To them, your shape is more strange than our own. They know us, and they trust us. So you will die, and no other Titan will ever come to Earth to menace us. That I read in your mind."

With a cold, sardonic inner laughter Glathnor realized that his racial heritage—the love of war and death—pulsed strongly in his veins. It was ironic that one who had mocked this heritage should welcome now the red tide of fury that blazed up within him.

Glathnor drew his electric gun.

"Shall I fear vermin? By the Suns! I tell you this—your Day of Killing

will never come."

He turned, seemingly ignoring the peril of the insect swarm. He took a step into the tunnel-mouth—

And whirled with flashing speed. The ants were flowing toward him, silently, dreadful menace in their huge mandibles. The foremost creature was not six feet away when a ravaging thunderbolt blasted out from Glathnor's gun, lighting the cavern with electric brilliance. The concussion of split air was deafening.

Then silence, and the ant lay motionless, a seared and blackened heap, its antenna burned stubs, its eyes covered with a white glaze. The others halted momentarily, taking stock of this danger, and Glathnor whirled and raced along the passage.

He gained a slight breathing-spell, and that was enough. When he turned again the ants were pouring into the passage after him. The Titan, smiling grimly, directed his electric blast at the roof. He had picked the spot carefully, and with a thundering crash great rocks and slabs came sliding down, completely blocking the tunnel.

Through blinding dust Glathnor's eyes sent out weirdly brilliant beams. On the other side of the barrier he could hear the ants already at work breaking through. Turning, he sprinted toward the open air.

Two ants he killed, and then he was out of the tunnel. The sun was low, painting the Earthmen's city with light. Glathnor had already made his decision, and, his giant muscles straining, he fled toward his space ship.

NO use to wait, now. One man could not destroy the multitude of ants that dwelt in their subterranean caverns, and no doubt they possessed powerful weapons that had been carefully kept hidden from Earthmen. But when Glathnor reached Titan, the administrator would keep his promise.

A fleet of space ships would set out across space; there would be red war over Earth; and the ants would perish. For their science could not compare with that of Titan; in fifty years—perhaps much less—the last ant-monster would be slaughtered mercilessly as it

fled through its burrow.

A spasm of disgust shook Glathnor; these vermin ruling Earth! The planet he had come to think of as home, the world where soft beauty of green fields and forests, and the warm glow of firelight existed in all the Solar System. . . .

A shout sounded in the distance. Glathnor looked back, saw racing figures larger on the plain Earthmen, riding the giant ants, seeking to kill the being they now regarded as an invader threatening the peace of their world.

Glathnor remembered the robot—his twin—within the space ship. Although a beam energy projector was necessary to control such robots over long distances and periods, they could be directed by telepathy under favorable conditions. Knowing that the ship was not far away, Glathnor sent forth a soundless summons, peremptory and urgent, as he ran.

The Titan had no wish to kill the men of Earth. He fled faster, until even his iron muscles felt fatigue. When, at last, he reached the flat slope that went down to the forest, and saw the space ship in the distance, he knew that he would have to fight. A bulky, gleaming figure was marching effortlessly toward him—the robot—but the pursuers were too close.

And now the two stood side by side, Titan and robot, identical superficially, the right hand of each figure gripping a gun in a metal-sheathed hand. They waited, and death rode swiftly toward them.

One man, astride a giant ant, was in the lead. The insect swept along with a smooth, mechanical rush; its rider drew his thermal pistol. A beam of hot light flared out.

An Earthman would have died under that deadly attack, but Glathnor's body was curiously constructed, extremely resistant to heat and cold. Moreover, the spacesuit protected him to some extent. But, seeing the other ants with their riders inexorably drawing near, and feeling the slow increase of heat in the suit's metal, the Titan realized that he could not escape unless he killed his enemies. Somehow he knew

it would be useless to attempt to frighten them away; the high, mad courage of Earthmen was too strong for that.

So Glathnor fired, and killed his attacker. Man and ant fused into a smoking black heap. The Titan sent forth a peremptory thought-command to the silent robot, turned, and gained twenty long strides down the slope before he glanced around.

The robot was battling, with mechanical, deadly accuracy, holding back Earthmen and ants for a brief eternity of hissing rays, harsh breathing, and sharp clicking of mandibles. To Glathnor it was strange indeed to see his twin standing there, fighting with a ray-gun that was soon exhausted, and then warring in primitive fashion dragging down a giant ant and crushing the monster's thorax between metal hands that were reddening and dripping in hot incandescence.

OVER the broken, ruined figure of the robot the pursuers came surging. Glathnor was caught midway down the slope. A hot ray flamed on the spacesuit; grimly the Titan turned, his gun ready; in murderous silence the horde came thundering down upon him.

Then it was a flaming maelstrom of scarlet battle, a gleaming, metallic figure, with inhuman rays of light blazing from its eyes, standing widelegged in the center of an inferno of raging heat, slaughtering with passionless, deadly accuracy. Glathnor lost count of those he killed. The battle-lust in his blood fought with the keen sorrow of destroying those whom he had sought to save.

At last, it was over. Still erect, but swaying half-blindly, the Titan towered over a smoking holocaust of burned things. Very far away, close to the City, he could dimly make out a movement that told of additional enemies. But it would be long before they arrived, and by that time Glathnor would be in space.

But much closer the Titan could make out an ant and its rider approaching. He did not wait; there had been enough of killing. Unsteadily Glath-

nor went down the slope and into the forest.

The electric gun was almost exhausted. Well, that did not matter now. But through innumerable tiny leaks in the spacesuit, oxygen, deadly to the Titan, was entering. Glathnor increased the flow of chlorine vapor, and his breath came less laboriously.

He plunged through a hedge of brush and, down a shadowed avenue of columnar trees, he saw the space ship thirty feet away. Then a voice shouted nearby, and Glathnor paused, lifting his weapon.

An Earthman astride a giant ant rode into sight, a man Glathnor recognized at the youth he had first encountered. Rondar's face was flushed and bleeding, but the Titan could not know of dissension in the City, of one man who stood against a race—an Earthman who had read friendship and a kindred spirit in the eyes of a Titan, and who had refused to believe the message of the ants. Rondar had set out to warn Glathnor, and to aid him if possible. The ant was his own, and Rondar's fatal mistake was in believing he could control the creature who had obeyed him for more than twenty years.

Rondar leaped down from the ant; he clicked a dismissal. But the creature disobeyed. It charged forward straight for the Titan, bowling over Rondar, who was in its path, like a tenpin.

The struggle did not last long. Glathnor had defeated more than a score of his enemies already, but then the Titan had been unwearied, and his gun unexhausted. The weapon blazed out—and swiftly the flame died. The giant insect, its eyes seared white by the blast, reached Glathnor. Its great mandibles closed on the spacesuit—and clamped tight.

One groan of abysmal agony came from Glathnor as his ribs and chest were crushed. Deadly oxygen flooded into the suit. He and the ant went down together and lay still.

BOTH were dying. The insect was nearly unable to move, but when Rondar tried to pry open the mandibles they only ground together more vi-

ciously. Glathnor stopped the Earthman's endeavor with a weak gesture.

He turned the stopcock of his chlorine-tank, and felt stronger, though the pain grew, too, in intensity. He lay quietly, looking up at the Earthman.

One thought hammered at his brain: proof must reach Titan! Otherwise his journey would have been in vain, and the Day of Killing would mean the end of Earthmen. Suddenly Glathnor realized what he must do.

Rondar was trying to ease the Titan's twisted position, but Glathnor, with an effort, caught the other's hand. He took the radioactive ring from his gloved finger and gave it to Rondar, who eyed it, puzzled and at a loss.

Then Glathnor pointed to the space ship.

His meaning was unmistakable. Perhaps Rondar thought there were other Titans within the craft; perhaps he thought there was aid waiting there. He did not know, as Glathnor did, that death lay silently in the space ship. But, half-running, he hurried along the dim forest corridor.

A flickering veil of hazy light spun itself like a web over the open port. This died as the radioactive ring Rondar clutched affected delicate mechanisms. In the depths of the ship robot machinery began to work. Levers slid silently along lubricated grooves. Pistons hesitated before plunging down.

The Earthman stepped over the threshold. Behind him the port closed silently. And at that moment a choking, blinding pain stiffened Rondar's

body. Powerful pumps sent chlorine hissing into the sealed space ship.

Thirty feet distant Glathnor watched. Through the transparent substance of the port he saw the Earthman become rigid, whirl, and claw at the barrier in a frantic effort at escape. Through Glathnor's agony a sharper pain lanced; though these men of different worlds had met but twice, a queer comradeship had grown between them. Now Glathnor had killed the Earthman, so that a message might reach Titan.

Slowly, and with ever-increasing speed, the spaceship lifted. It fled into the clouds of sunset and was gone. Perhaps, feeling that surge of movement, some hint of Glathnor's purpose came to the dying Rondar. Perhaps he realized that at the end of his journey there would be men of an alien planet who would probe his brain with thought-readers, and who would learn there the proof they sought. So the metal coffin rushed on into the void. . . .

And to Glathnor, held motionless in the crushing jaws of the giant ant, there came a vision of Armageddon. He saw the skies of Earth darkened with ships from Titan; he saw the insects battling desperately, hopelessly, and at last going down to an oblivion from which there would be no return.

And, at the last, Glathnor painfully turned his head to the west, and his strange, faceted eyes looked into the burning splendor of sunset clouds motionless above the green expanse of forest. So the Titan remained, unmoving, until in a little while he died.

Next Issue: WORLD WITHOUT CHANCE, by POLTON CROSS



WARNING TO CRANKS

If you want to stay cranky, look out for Star Single-edge Blades! They're so keen, they're so gentle with a tender skin that if you're not careful, you'll be smiling all over. Famous since 1880! Star Blades cost little: 4 for 10¢. Star Blade Division, Brooklyn, N. Y.




STAR SINGLE-EDGE
BLADES 4 FOR 10¢
FOR GEM AND EVER-READY RAZORS



Quade guided his speedy cruiser toward the Meteor

PARADE

FEATURING
ANTHONY QUADE



Many a Man's Plans to Film the Great Martian Inferno Had
Gone Up in Smoke—But When Tony Quade Had
to Shoot It, There Were Fireworks!

By HENRY KUTTNER

Author of "Doom World," "Hollywood on the Moon," etc.

CHAPTER I

Quick Montage: Trouble on the Moon

VON ZORN was about to make a speech. The chief of Nine Planets Films, Inc., sat rigidly at his semi-circular glass desk, staring at the televisor eye a few feet away. In a moment his small, simian face would be reproduced on receiver-screens all over the System—for this was an interplanetary hook-up. Once each week Nine Planets took the air, but, though stars and singers and comedians performed often, it was seldom indeed that the chief condescended to speak.

Anthony Quade, camera expert, had arranged his large body comfortably in a nearby chair, and was sketching a libelous caricature of Von Zorn on a convenient pad. He was wondering why the chief had sent for him. Something had gone wrong, of course.

He didn't know what, but when anything went haywire in the gigantic

organization of Nine Planets, Von Zorn was apt to send hastily for Quade. The movie expert blinked sleepily and added a toothbrush mustache to his employer's portrait.

One of the televisor operators said, "Two minutes now." He flicked over a switch. Soft music welled out from an unseen transmitter. It died away, and a mellow voice observed,

"Greetings to the System, from Hollywood on the Moon and Nine Planets Films. Tonight our program is dedicated to New York. We're right over you, Manhattan—can you see us? Over more than two hundred thousand miles of space we send greetings to you, New York, and to the whole System. We're pretty far away, but during this hour we bring you, via televisor, the life of the most glamorous and romantic city in the Universe—Hollywood on the Moon!"

TONY QUADE abstractedly attached a skinny monkey's body to Von Zorn's pictured head.

A Novelet of Hollywood on the Moon

"Nestling in the hollow of the Great Rim," the announcer went on, "on the half of the Moon perpetually turned away from the Earth, rises this incredible metropolis. A garden city, and a place where science reaches out to new frontiers, where artificial gravity-fields and the most healthful atmosphere in the System combine to make Hollywood on the Moon a wonderland."

Quade drew a tall silk hat atop his chief's head, and, struck by a sudden thought, carefully outlined a furry arm so that it seemed the Von Zorn-faced monkey was scratching himself.

"And now we bring you the head of Nine Planets Films, perhaps the greatest figure in the motion picture industry today—Mr. Ludwig Von Zorn, who has a personal message for you."

An unseen orchestra trumpeted. The television operator touched a button and nodded at the chief, who hastily snatched up his script and glared into the eye. As the music faded into silence Von Zorn took the ether.

"I—uh—I wish every person who is listening now could visit Hollywood on the Moon," he began. "I wish you could spend an evening at the Silver Spacesuit, watch the stars strolling along Lunar Boulevard, and stroll through the studios of Nine Planets. I know, if you could do that, just what you'd say. You'd say, 'What's all this activity about? Why is everyone so busy?'"

"Wonder who wrote that speech for him?" Quade said inaudibly. He carefully tore up the caricature of Von Zorn and placed the fragments in his pocket as the speaker continued.

"I'll tell you why everybody is so busy here. We're working on a new picture, one of the greatest ever to be put on the screen. The biggest stars of Nine Planets will be in it—Clint Padrick, Edith Rudeen, Ailyn Van, and our latest discovery, Kathleen Gregg—and more, many more. I'm speaking of *The Star Parade*, the most spectacular interplanetary picture ever filmed. Watch for it—the release date isn't far off!"

Sweating, Von Zorn relaxed. Hastily he fumbled in a drawer and

brought out a bottle, from which he drank long and thirstily, while the television operators dismantled their apparatus and departed. Quade got up and stood waiting.

"Oh, Lord," Von Zorn moaned. "What an ordeal. If the public only knew—Quade, we're in trouble. *The Star Parade's* jinxed. We've blurred it up all over the System, and it's six weeks behind schedule now. Trouble right from the start."

"Yeah," Quade said. "I heard a few things. Lots of temperament, eh?"

"Five stars! You know what that means. Ailyn Van raises Cain on an average of once an hour; Clint Padrick and Edith Rudeen—they're married, you know—are fighting all the time; Floyd Stover can't stay sober—"

"What about Kathleen?" Quade asked. He had been responsible for Kathleen Gregg's entry into pictures, and had appointed himself her guardian angel—a role the girl sometimes resented.

"Oh, she's okay," Von Zorn admitted. "By the way, you gave her an engagement ring last month. Take a look at her contract before you marry her."

"I did," Quade said sadly. "It was a dirty trick, Chief. She can't get married till her contract runs out."

VON ZORN laughed falsely.

"Oh, you can wait a little while. We don't want a prospective star marrying and losing half her publicity value, you know."

"If you ever need a blood transfusion, they'll have to pump ammonia into your veins," Quade growled. "You coldblooded—"

"Hold on. I was just going to assign you to *The Star Parade*, so you could be with Kathleen. I know how you feel, Tony. I've got a heart, you know."

"Try defrosting it some time," Quade suggested. "I know darn well why you're assigning me to that jinx flicker. Nobody else wants the job."

"Have it your own way," Von Zorn said. "Fowler's in the hospital. Ran into trouble on the Mars location—something bit him, and infection set

in. Now the troupe's without a director. And there's been so much trouble I don't want to let anybody but you handle the job, Quade. Especially since there's been a set-back in filming the Inferno."

Quade's eyebrows quirked up.

"I told you the Inferno couldn't be filmed," he said grimly. "It's impossible."

"Uh—I don't think so. The labs have turned out some protective armor that seems to be okay. At least—"

"Protective armor!" Quade snorted. "What can armor do against the Inferno? There's enough sub-atomic energy in that Martian hellhole to blast Hollywood on the Moon to bits. It can't be filmed!"

"It was—once," Von Zorn said softly, his gaze cool and sharp.

Yes—the Inferno had once been filmed. Ever since the discovery of that fantastic cavern on Mars scientists and explorers had tried to do the impossible. A trader named Logan had first found it, decades ago, when he had traced down the Martian tribes' legend of an underground city near Elysium that had been destroyed by the gods.

At one time, before interplanetary flight had existed, a race of Martians had made their home in the caverns of an extinct volcano, and had built a metropolis there. But the red planet is old, and earthquakes rack it as the crust contracts, bringing more and more pressure to bear on the molten exterior.

Scientists had theorized on what had caused the catastrophe. A passage had opened connecting the cavern city with the heart of Mars, and through this passage poured, not lava, but—energy! The tremendous unleashed power from the center of the planet, blasting up with inconceivable force, carried undreamed-of energy waves from the smashed atoms far below.

Quade remembered this now.

"There's been quite a few people who tried to film the Inferno," he stated. "You're right, one man did succeed. Ten years ago he crawled down into it with a rope around his waist, a suit of protective armor, and

a pocket camera with specially treated film. When his friends pulled him out he was dead. His brain had been burned out by the rays down there. Good Lord, Von Zorn, those waves are stronger than radioactivity! Gamma rays can get through centimeters of lead, but the radiations of the Inferno—well, they're a lot stronger than that. Don't forget they're created by pressure that knocks the stuffing out of the atom."

THE movie executive interrupted. "You said one man succeeded."

"Yeah—he got a picture, pretty hazy and vague. And it killed him."

"Science has gone forward in ten years," Von Zorn persisted. "Listen, Quade, we've blurred *The Star Parade* all over the System as the picture that'll have authentic shots of the Inferno. All we need are the backgrounds; we'll use double exposure to get the actors in the scenes. We can't fake the Inferno itself—not after our advertising build-up."

"Why the devil did you let yourself in for it in the first place?" Quade demanded.

"Gerry Carlyle," Von Zorn said between clenched teeth. "The catch-'em-alive dame. We've faked so much interplanetary stuff that the public won't pay to see our pics any more, when Carlyle brings back the real thing for the London Zoo. Audiences are tired of our robots. But the Inferno—that's something Gerry Carlyle can't put in her damn zoo!"

Quade considered. Both he and Von Zorn knew how difficult was the task before the man who directed *The Star Parade*. A film that starts out with a jinx is hoodooed all the way through. Moreover, the Martian location was an outpost that might prove dangerous—certainly the Inferno was! Against these considerations Quade weighed others.

This picture was Kathleen Gregg's big chance. She couldn't afford to fall down now, for the ways of a studio are devious, and many a star has dropped from the limelight for no fault of her own. Also, Quade knew Fowler. The director had for years

wanted to direct just such a picture as *The Star Parade* would be, and he had worked himself to the verge of a nervous breakdown trying to handle every detail himself. Quade realized what the film meant to Fowler.

So he said, "Can do, Chief. On one condition."

Von Zorn looked alarmed. "Yes?"

"I want *carte blanche* in handling your five stars. What I say goes. I know Ailyn Van and her temperament—and the others. If I don't make 'em jump through hoops they'll be making me jump off the Rim."

"I suppose you're right. But I don't want any trouble."

"There won't be any." Quade turned to the door, grinning. "Of course, I may have to spank Ailyn a bit and sock Clint Padrick in the jaw. They're all hams to me."

QUADE found an elevator and was hurtled to street level, eighty floors, in the time it took him to kindle a stubby, well-caked pipe. He inhaled a whiff of the green, aromatic tobacco grown on the Moon, and stepped out on the yielding composition of the sidewalk, figured in colorful mosaic.

A blaze of lights made the street brilliant, so brilliant that it was difficult to tell whether the sky was blue or star-studded black. It was night, though, Quade knew. The solar orb was blazing on the other side of the Moon, and Earthlight never touched the film metropolis.

Quade hailed a taxi and was whisked across the city to the hospital, a huge spherical building of crystal in the center of which an artificial sun was built, sending its ultra-violet rays throughout the entire translucent structure. The lift took Quade to Fowler's room. The director, a thin-faced, tired looking youngster, was lying silently in his bed, lips tight, eyes worried.

Quade did not attempt false heartiness.

"Tough luck, old man," he greeted him. "Von Zorn told me to take over."

Fowler nodded.

"I thought he would. Glad it's you, Tony. I know you'll finish the flicker."

"I'll do my damndest. And, incidentally, you're going to get screen credit. I'll see to that. Now—" He waved down the director's protest. "Now I want some dope on *The Star Parade*. How do things line up?"

"Things went haywire all of a sudden," Fowler said, grimacing. "That Mars location did the business. It's the craziest place. Something there bit me."

"I know. What was it?"

"You'll think I'm crazy, but—well, a claw bit me."

Quade blinked.

"Claw? A land-crab?"

"I said a claw. Nothing else. I'd shot a snake of some kind, and was just about to pick it up, when this claw—a big green thing—popped out of nowhere, bit me, and ran off with the snake. I told you it sounded screwy."

"Dunno. There're lots of queer animals on the planets. I'll keep an eye out for your claw, anyway. Had you got far with the Mars stuff?"

"Not very. The stars—all five of 'em—came back to Hollywood on the Moon with me. They wouldn't work with the assistant director. At least, Kathleen Gregg would have, but the others overruled her. The rest of the crew are on Mars, waiting. You'll have to round up the five stars."

"What about the Inferno?" Quade asked.

Fowler shook his head, frowning.

"Haven't had a chance to put it in the can yet. Too much trouble. Those new armored suits may do the trick—certainly Von Zorn's radioactive-resistant film will work, but—"

"I've a hunch the suits are corny," Quade said. "Those rays can get through almost any kind of shield. But we can probably dope out something." Inwardly, though, he wasn't so sure. The rays were deadly to brain tissue, and Von Zorn would willingly slaughter all his staff to get a hit picture. Not for the first time Quade cursed his chief.

FOWLER moved uneasily.

"Don't take any risks, Tony. I don't—oh Lord! What's that?"

The door had opened, and something popped into the room with the agility of a jack-rabbit. It gave a tremendous hop, sailed entirely over the bed, and crashed down on the remains of Fowler's dinner. Plates tinkled, and the table on which the tray stood tilted ominously.

"I picked him up on Ganymede," Quade said, after a startled pause. "It's called a Bouncer. Native of the asteroid—"

The Bouncer jiggled with excitement, and the table swayed, while spilled cocoa dripped gently to the floor. The creature was about a foot and a half high, and resembled a tailless kangaroo. Short, stubby forearms and tiny, human-looking paws were folded over a bulging little paunch.

On a head shaped like a turnip were (a) two saucerlike eyes, (b) a button of a nose, and (c) down under a remarkably long upper lip, a small, sadly drooping mouth. It was entirely covered with white fur, now decorated with orange marmalade.

The Bouncer opened its puckered mouth and said quietly, "What are you doing here?"

Fowler moaned.

"It's no use your pretending to see it too," he told Quade. "I'm having hallucinations. I just heard it talk."

"Sure, Quade chuckled. "It reads thoughts. Read my thought just now. It picks up the strong vibrations broadcast by a brain, and repeats 'em. Listen, I'll show you."

He became silent, while the Bouncer, suddenly conscious of the marmalade on his rotund body, began to lick it off. Then he straightened, nodding energetically.

"I'm a native of Ganymede," he declared squeakily. "My name's Bill. Pleased to know you, Mr. Fowler." He hesitated, then went on, "Mr. Quade, you're getting uglier every day. How long has it been since you combed your hair?"

Quade's eyebrows lifted. Then, smiling wryly, he sprang for the door and wrenched it open. A small girl, standing in the corridor, was doing her best not to laugh.

"Oh, it's you, Kathleen," he said. "I knew I didn't broadcast that last crack. Come on in."

Kathleen Gregg had a stubborn chin, pleasantly warm brown eyes, and a temper. She showed it now.

"So you're taking over *The Star Parade*, eh?" she observed. "Well, that's lucky. I was just going out to collect our four stars, and I had my brass knuckles ready. That'll be your job now, Tony."

"I'm ready for it. I was just getting the dope from Fowler."

"Good. I just came from your apartment. They said you'd gone to see Von Zorn, so I phoned him and figured out where you were. Bill begged to come along, so—"

"Don't believe it, Tony," the Bouncer broke in, blinking owlishly. "She enticed me out. Offered me candy. And she didn't give it to me yet, either."

"Oh, that's too bad," Quade said reprovingly to Kathleen. "You ought to keep your word, you know. Give him the candy, Kate."

It was almost impossible for Fowler to realize that the small Ganymedeans were merely broadcasting Quade's thoughts. However, for the moment he thrust thought of the Bouncer aside.

"Tony," he said. "About *The Star Parade*—"

Quade sobered.

"Yeah. Well, Kate, can you round up Ailyn Van and Edith Rudeen? I'll get Clint Padrick and Stover. I want to start for Mars in three hours."

Without a word Kathleen nodded and went to the door.

"See you at the spaceport," Quade called, as the Bouncer leaped from the table and hopped hastily after the girl.

CHAPTER II

Follow Shot: Moon to Mars

QUADE found Floyd Stover floating in his swimming pool, red-eyed and depressed. Nine Planets

greatest character star had a hangover. Feebly rubbing his great mop of white hair, he climbed up the ladder and agreed to be at the spaceport as soon as he could dress and pack.

There was no trouble. Stover was an actor to the core. But he loved to go on a binge. Now that he'd got that out of his system he'd be okay for a while.

"Know where Clint Padrick is?" Quade asked the star.

Stover's bushy eyebrows came down. His voice was a husky roar.

"Aboard the *Meteor*, I think," he said. "He had a scrap with Edith and headed for—"

That was all Quade needed to know. He nodded and headed for the street, where a taxi whisked him to the spaceport. His two-man cruiser, a speedy, powerful ship with the usual transparent nose of camera-craft, was ready for him, and in half an hour he was hurtling up from Hollywood on the Moon, siren screaming to warn aircraft away, gravity plates set.

The *Meteor* was a luxury liner, a gambling space ship that hung in the void a hundred miles or so above the surface of the Moon. The elite of filmdom went there for a thrill.

A blaze of searchlights stabbed out. The *Meteor's* outside gravity plates kept an atmosphere around its huge hull, otherwise the flare of the varicolored lights would have been invisible in the vacuum. However, radio beams guided ships to it, for the great arc-lamps were useless in direct sunlight.

Funnels of metal mesh protruded from various points on the *Meteor*. Quade guided his cruiser within one of these and shut off the power as powerful magnetic fields took hold, sliding the little ship smoothly into an air-lock.

Within the *Meteor* was a blaze of color. Fountains spurted, rainbow-hued; precious tapestries lined the walls; *objets d'art* from all the planets were here. An orchestra provided dance music, but the attention of most of the patrons was riveted on the various gambling devices. The most popular was a variation of the ancient pin-

ball game, in which the operator tried to direct a miniature rocket ship into a small target on the board.

Quade nodded to an attendant, resplendent in white satin.

"Clint Padrick here?" he asked.

"In the roulette room, I think," the other told him, pointing. Quade went into the roulette room.

In a great sunken pit in the center of the floor was a wheel, rising to a cone in the middle, and rimmed with small compartments, each numbered. The croupier was just calling, "All bets in!"

Quade stared down for a moment at the gleaming space ship, not a foot in diameter, that suddenly popped into view on the wheel. It was studded with rocket ports, and from one of them blasted a fiery explosion. The spherical little ship drove against the side of the pit, and rolled down into one of the numbered compartments. Again a rocket banged, and the craft whisked out of its resting place, presently dropping into another.

LOOKING around, Quade saw Clint Padrick. A lock of dark hair was plastered wetly to the star's tanned forehead, and the somewhat sullen lips were drawn into a hard line. Padrick was handsome, no doubt of that; good-looking as the devil, and with the devil's temper. He turned quickly as Quade touched his arm.

"Oh, it's you, eh? Well, what d'you want?"

Quade told him.

"Yeah. You go on to Mars. I'll be along directly."

"That won't do," Quade said. "The deadline on *The Star Parade's* in four weeks. You—"

Padrick ignored him. He turned to watch the rocket-roulette, and cursed under his breath as the croupier shouted a number. Quade hesitated, shrugged, and found an attendant. He slipped him a bill, and presently the waiter returned with a glass of blue-green liquor. Exchanging a wink with Quade, he went to Padrick's side. The drink was doped, of course. The staff of the *Meteor* kept a supply of sopor-

ifics for just such a purpose, keeping the good-will of the studios by co-operating with them whenever a star got out of hand.

Padrick suspected nothing when the waiter offered him the glass, with the murmur, "Your order, sir." He drank, and after a moment his eyes dulled. Quade took his arm and guided him to the port where the cruiser waited.

The drug was effective. Padrick's will was in complete abeyance, as the hypnotic—a harmless derivative of hyoscyamine—went into action as a cerebral depressant. When the star recovered consciousness, he would be on Mars, with no memory of the intervening hours.

Some of Quade's regular crew, headed by Wolfe, a thin-faced, capable youngster, were waiting at the spaceport. He knew them all—dependable men, who had worked with him for years. Stover was aboard, with an ice-bag on his bushy head; Quade guided Padrick to a stateroom where the star's wife, Edith Rudeen, sat reading. She was a pretty little blonde whose Dresden china appearance was aided by her curiously tender blue eyes. But when she saw Padrick she got up and called him a tramp.

"Get out of here, you half-witted atom," she said furiously, and then paused, staring. The anger went out of her eyes. "Tony—what's happened to Clint?"

"Nothing. I had to dope him a bit to get him aboard. He'll be okay pretty soon. Can you take care of him?"

The girl didn't answer, but the look on her face as she guided Padrick to a chair was answer enough. Grinning, Quade went out. He sobered as he remembered the temperamental Ailyn Van. Where was she?

A LOUD scream told him the answer. Ailyn Van came striding along the corridor. Quade repressed a shudder as he met the blaze of her platinum eyes. Centuries before gold and platinum had been used to treat weakened eyes, but only lately had the

iris-tattooing vogue come into fashion. Ailyn's face, for all its streamlined boniness, was strikingly attractive, as movie audiences had testified. She was, however, temperamental as a *murri*.

"Where's Kathleen Gregg?" Ailyn demanded, her platinum-coated nails twitching convulsively. "She said she was coming here! She's got Picasso—kidnaped him!"

Hastily, Quade disclaimed all knowledge of the missing Picasso, wondering what Ailyn was talking about. The star flung away, vituperating Kathleen Gregg, and presently Kathleen herself emerged from a stateroom, her brown hair disheveled.

"Let's go, Tony," she said softly. "Everybody's on board."

Quade nodded, called an order into a diaphragm set in the wall. The siren screamed. Though there was no sense of movement, Quade knew that the giant camera-ship was racing up through the atmosphere.

"How did you do it?" he asked. "What's Picasso, anyway?"

"Her pet," Kathleen chuckled. "She loves it like a husband. She wouldn't come, so I snatched Picasso and ran for my taxi. I knew she'd trail me. This is Picasso." She pointed at her shoulder.

Quade blinked. As far as he could see, the girl was indicating her black dress. Kathleen fumbled at her shoulder, lifted something and extended it to Quade. It looked like a plastic heap of clay that suddenly turned from black to flesh-color. She put the thing on Quade's gray leather tunic, and it hastily turned gray.

"It's an—an animal, I think. They've just made a few in the bio labs. It's about six inches tall, and it—what was it Ailyn told me?—it's got muscles like a squid. What did she mean?"

"Oh," Quade said. "I remember hearing something about 'em. Chromatic camouflage. *Loligo's* a cephalopod—"

"Come again?"

"Squid, cuttle-fish, octopus, and so on. They've got chromatophores."

"Good for them," Kathleen said grimly. "Stop showing off and tell

me what you're talking about."

"Single cells, pigmented in different colors, just under the epidermis. Usually they're hidden, but they can expand as the muscles around 'em contract, so the color of the squid's skin is changed. It's just camouflage."

He touched Picasso with an exploring finger, and the animal folded itself around his hand, turning pale. "If it's on a red surface, the red chromatic cells are pushed up on the surface. On a blue surface, the blue cells get their inning. *Sabe?*"

Kathleen nodded.

"Yeah. Well—" She glanced aside as the sound of hasty footsteps came to them. "Give Picasso to Ailyn. I think that's our star coming now. If she asks for me, tell her I'm dead." And the girl promptly disappeared into a stateroom.

THE camera-ship landed about fifty miles west of Elysium, on the equator of Mars. The planet became less habitable as one moved toward the poles, until eventually spacesuits were necessary for outdoor work. But on the equator the direct rays of the sun, penetrating through the rarefied atmosphere, made the climate pleasantly warm.

Moreover, it was spring, and the thawing of the ice-caps had released an unusual amount of water vapor into the air, compensating to some extent for its usual dryness.

As the ship slanted down past Deimos the surface features of Mars were distinctly visible, veiled in a few places by tenuous clouds. The camp, Quade had learned, was in a forest clearing, a jungle surrounded on three sides by one of the great saline deserts. He took over the controls, and made an easy landing a hundred feet from the group of metal-mesh tents. Now the hard work would begin.

Four weeks to complete *The Star Parade*—and the most difficult batch of stars on Nine Planets' payroll! Padrick and Edith were fighting viciously; and Ailyn Van had relapsed into a state of sullen rage, augmented by the fact that her pet, Picasso, had conceived a deep-rooted affection for

the Bouncer, who was aboard.

The chromatic animal spent most of his time clinging affectionately to the Bouncer's plump body, taking on the white hue of Bill's fur.

"Bill," Quade said to Kathleen as he helped her unpack, "is having a hard time of it. He picks up thought-vibrations, you know. And Ailyn's feeble-minded pet keeps hanging on him, broadcasting affection. That's what I figure, anyway. Look at that."

The Bouncer hopped dispiritedly into the room, peering down at his stomach. He never was sure when Picasso was clinging to him, since the little animal's camouflage was so perfect, and his weight so small, especially on Mars. He said feebly, "Nice and . . . warm. Nice . . . nice."

Kathleen looked at Quade inquiringly. The film expert shrugged.

"Bill's pretty intelligent, you know. I imagine he gets Picasso's thoughts and translates them into English. Naturally that super-chameleon hasn't much of a brain, so its thoughts aren't very coherent. I gather it thinks Bill's nice and warm."

The Bouncer came to Kathleen's side and hugged her leg, squeaking unhappily. She bent and fumbled in the fur until she had dislodged Picasso, who hastily turned a warm tan. She carried it to the door and shut it out.

"If I knew what the thing looked like, I might stand it better," Kathleen observed. "But it's camouflage is always so perfect it blends completely with its surroundings." She glanced out of a porthole. "Are we going to sleep in those tents, Tony?"

"Suit yourself. There isn't room for everybody on the ship. The tents are comfortable enough."

KATHLEEN shuddered. "But—it gets cold here at night, doesn't it? We'll freeze to death."

"Far from it! Those tents have got high-frequency coils in them. The electricity warms you up by inducing currents in your conducting tissue. But you have to wear special lounging-suits, ones without any metal in 'em. Otherwise you might have holes

burned in your hide."

"Live and learn," the girl murmured. She leaned her elbows on the porthole, her gaze dwelling on the blue-green jungle all around. Save for the bluish tint and the extraordinary size of the leaves, it might have been a terrestrial forest.

All Martian vegetation had unusually large leaf-surface, of course, in order to gather the necessary amount of radiation from the Sun, which was between thirty-five and sixty-three million miles further away than on Earth. This variation was caused by the eccentricity of its orbit—0.0933, greater than that of any other major planet except Mercury.

A wry smile twisted the girl's lips as she saw the white-haired Stover following unsteadily in the trail of Clint Padrick and Edith Rudeen, who were quarreling loudly. There was trouble ahead, she foresaw.

Actually there was far more trouble to come than Kathleen guessed—for a certain inhabitant of the Martian forest was becoming increasingly curious about these strange visitors. . . .

CHAPTER III

Close-up: Jigsaw

SHOOTING a picture presupposes close cooperation. Quade got it from the technical crew—photographers, sound mixers, set dressers and builders, color engineers—and he got it from most of the actors. The stars were another matter.

Kathleen Gregg, of course, was all right. But Stover always wanted to go off on a bender. Where he'd hidden the Venusian drink he habitually imbibed, Quade did not know, although he'd made a hasty search of the ship. Picasso wasn't thriving on Mars, for some reason—insufficient oxygen, perhaps—and that made more friction with Ailyn Van. Half the time Clint Padrick and Edith Rudeen refused to work together. Quade tore his hair, swore, argued, pleaded, and eventually got about half of the picture shot. It

took all of three weeks.

Moreover, a curious air of unrest hung over the camp. Many had the disquieting feeling of being watched. They would glance over their shoulders quickly, without reason. There was furtive movement in the jungle all around them. And, too, inexplicable noises began to be heard—deep-throated roaring bellows from far away. Naturally this caused trouble for the sound recorders.

Quade was the first to discover the claw—the green thing of which Fowler had spoken in the Lunar hospital. He was examining the Inferno, with Kathleen, standing near the edge of the great crater that sloped steeply down to incredible depths. Nearly a mile in diameter, the pit's sides were so jagged and precipitous that its descent would be a feat of mountaineering. Quade, peering through his binoculars, was frowning.

"Von Zorn's crazy," he said. "The Inferno can't be filmed. We've made tests with those armor-plated suits of his, and they don't hold up. They worked all right in the labs, but the rays down there are stronger than anything a scientist can build up."

"Why not use robots?" Kathleen asked.

"We thought of that. But a robot has to be guided, and the crater's too steep and dangerous for that, and the Inferno's way down out of sight; we'd have to work blind. Anyway, the rays would upset the radio control. We've an automatic camera, one that works on powerful springs, because electricity would go haywire down there."

"What's so wonderful about the place, anyway?"

"For one thing, it's never been filmed before," Quade told her. "Except for one hazy snapshot. There's a city down there, and the energy storms make an effect as spectacular as a Solar eruption. It'll make the picture big box-office—if we can film it. Don't get too close. Even at this distance it isn't any too safe."

A STRANGE something scampered into view, running rapidly up the slope behind them. Quade sud-

denly chuckled. "Kate," he said softly, "Look at that." He picked up a stone and hurled it, kicking up dust near the object, which sat down.

"For heaven's sake!" the girl gasped. "What is it?"

"It's a Teapot," Quade said. "See?"

The Teapot wasn't a bird, though it looked rather like one, but was actually a reptile, covered with hard, chitinous scales. On stiltlike legs was supported a rotund body, with a little spike of a tail at one end and a long, boneless neck at the other.

It had a head like a tortoise's, and now, as the pebble Quade had thrown thudded near it, the creature hastily folded up its legs and collapsed. Its neck curved, writhing, and abruptly the head seemed to vanish into the reptile's body.

"Pouch on his stomach, like a kangaroo has," Quade explained. "See the reason for its name?"

Indeed, the fat creature resembled nothing more than an ordinary teapot, with its spiked tail and its long neck, now curved so that it resembled a handle. Quade went on, smiling.

"Nothing can hurt it now, Kate. Its only vulnerable part is its head. A chisel can't cut through that armor-plate. Look." He stepped forward, bent to pick up the Teapot by its "handle." Then he paused, staring.

Something scuttled out of the bushes and snatched at the Teapot. It was a claw. Nothing else. Just a big green claw a foot long.

The Teapot, sensing danger, unsheathed its head, sprang erect, and ran away. It ran into the crater, the claw in pursuit.

Quade looked amazed. "It looks like a claw," he said dazedly.

"It—is!" The girl swallowed nervously.

"And it had a lot of little legs under it—I noticed that. But it's impossible. I've seen plenty of queer things on the planets, but even the Ganymedean leeches had more to them than that. I—"

He broke off, his words dying in a startled gulp. An eye was looking at him. With a cold, fishy stare it was gazing searchingly up from the top of

a small boulder, a round eyeball covered, except for the pupil, with a horny shell. Quade made a tentative motion toward it, and the eye arose on a dozen spidery legs. With deceptive speed it glided down the rock and ran into the crater after the Teapot and the green claw.

The Martian reptile was having trouble. Quade lifted the binoculars.

"It's got within range of the rays," he said. "Its brain-tissue is burning out—"

Far down the precipitous slope the Teapot slowed, stopped, and fell over, kicking. In a last desperate gesture it thrust its head into the protective stomach-pouch. The green claw grabbed it and quickly retraced its steps, the eye keeping pace with it. Presently the unusual group passed over the crater's edge some distance from the two humans, and was lost in the forest.

"Let's get back to camp," Quade said. "I don't get this at all."

THERE was trouble at the ship. One of the cameramen had been bitten. A green claw had attacked him, he said; and already his leg was purple and swollen. The doctor was attending him, as well as taking care of a script girl who had encountered "a snake with legs—with suckers all over it." Quade thought it sounded like a tentacle, but he knew that tentacles don't wander around by themselves. What fantastic forms of life had they encountered in this Martian outpost?

One good thing resulted. Floyd Stover, his leonine mane flying, staggered into the camera-ship with horror written all over him. He called Quade into a space-lock.

"Eyes," he groaned, shuddering. "Eyes that chased me through the forest. Quade, I've tasted every brew in the System, but I've never yet found one that made me see eyes. It's a judgment. I'm going on the wagon—you're my witness!"

He turned to a spacesuit and fumbled with the oxygen tank. Abruptly a stream of amber liquid gushed out. "I hid the stuff here—but I won't take another drop." He tilted the suit un-

til the tank was empty. "Out, damned spot! Out, I say!" the star recited, reverting to his days as a Shakespearian actor.

And he pulled a tube of white pills from his pocket and gulped several.

"High-powered benzedrine," Stover explained shakily. "Stimulant. Best thing in the world to sober up."

"Well, don't take too much of it or you won't sleep for a week—look out!"

Quade's warning came too late. The tube dropped from Stover's trembling hand and spilled its contents on the floor. The Bouncer popped out from somewhere and snatched up one of the pills, devouring it greedily. Quade retrieved the rest of the benzedrine before Bill could eat any more.

He handed the container back to the actor. Stover would keep away from the brew now, Quade knew. One problem was solved. But a new one had arisen. What the devil were these fantastic creatures that emerged from the jungle piecemeal? And why hadn't they ever been discovered before.

Quade knew the answer to that. This was an unproductive, lonely outpost, avoided even by the nomadic Martian tribes. The few explorers who had come to study the Inferno hadn't stayed long. Almost anything could exist undiscovered in this strange forest.

A quick movement on the part of the Bouncer caught Quade's attention. Bill was up in a chair, a curious glazed expression in his eyes. Picasso was crawling rapidly toward the floor, a perambulatory bump of blue-white on the chair's blue-white steel. He reached the carpet, scuttled toward the door. Kathleen was there.

Quade lifted a cautioning finger, glancing, puzzled, from Bill to Picasso. The latter climbed Kathleen, fell in her pocket, and hastily emerged carrying a piece of candy. She always had some chocolate for the Bouncer, who loved it.

PICASSO reached the floor, returned to Bill's chair, and went up its leg. He paused beside the Bouncer,

who snatched the candy and ate it with intense satisfaction.

"Well, well!" Quade said. "Know what happened?"

"Picasso's smarter than we thought," Kathleen said.

Quade answered sharply.

"No, he isn't. Bill's the smart one. Funny I never thought of that—that the telepathic function might work both ways. Bill can read thoughts—we always knew that—but he can also send 'em out! At least he can when his brain's pepped up with benzedrine, and when he's got a half-witted subject like Picasso to work on. He sent out a mental command to Picasso and made him steal the candy in your pocket—I'll lay money on it!"

"Well, he deserves another piece for that," Kathleen said, and acted on her words. And, smiling to himself, Quade went to the galley and secured sandwiches and coffee from the cook.

An hour later he had decided on a plan. He had been pondering the mystery of the green claw, and had arrived at a possible solution. It seemed incredible, but—

Quade called young Wolfe.

"Get some weapons, kid. We're going hunting. Get an electroscope while you're at it—I've a hunch." Remembering the Bouncer's mind-reading abilities, he set out to find Bill, after ordering everyone aboard the ship.

Wolfe brought several electroscopes, with lead shields for them.

"You're thinking the same thing I am, eh?" Quade grunted as they started out from the lock. "Well, I won't believe it until I see it. It's incredible."

Wolfe shrugged.

"What about the robot animals we use in pics? They're radio-controlled."

"Yeah, but — a living organism! Let's go this way. The claw headed north."

They plunged into the depths of the forest. It was not difficult going, despite the size of the vegetation. Most of the trees' vigor was concentrated in the broad, flat leaves that made a ceiling far overhead to catch

the Sun's rays. It was a green, dim twilight through which they moved, resembling the vague depths of the hydrosphere.

Above the jungle, Quade knew, it was pleasantly warm, but at ground level an icy breeze chilled him. Some of the trees, he noticed, were thickly coated with a furry kind of moss, which apparently served to keep the cold from penetrating through the bark—a striking form of true symbiosis, mutual aid between parasite and host.

The Bouncer hopped along quietly, subdued and a little frightened. His huge eyes, capable of seeing into the infra-red and ultra-violet, found the gloom no handicap, but more than once the two humans were forced to use light-tubes. They came out into a little clearing, and paused as a thunderous roar boomed out.

"Wait a minute," Quade said. "Come here, Bill." The Bouncer huddled close to Quade's legs, shivering. Reading Wolfe's thoughts, he said faintly, "What's this coming? It's a—a Teapot."

Sure enough one of the reptilian Teapots was trotting slowly into the clearing. It paused as the booming died, and fell to work cropping a growth of succulent moss. An incredible thing scampered into view from the gloom.

IT looked like a balloon, stretched tightly over a pale, circular disc. About as large as a man's head, it ran rapidly on several boneless legs until it was a dozen feet from the Teapot. Then the balloon swelled; the disc vibrated suddenly. A tremendous booming sounded.

With a start the Teapot lifted its flat head and swiftly departed. The balloon ran after it. Wolfe mopped his forehead.

"It was a lung," he said to Quade. "If I know my physiology, it was a lung. And a diaphragm. The air pressure made the diaphragm vibrate and caused that sound."

"Right. Can you guess why? Ever see the way Gerry Carlyle's men do jungle-hunting on Earth? They form

a semi-circle, close in around their prey, and raise a racket with drums and gongs to frighten the animals toward them. I'll bet that's what our balloon was doing. Driving the Teapot toward—"

He stopped, eyebrows lifted.

"Give me an electroscope."

Carefully, Quade withdrew the instrument from its lead sheath. But the gold leaf remained stiff, unwilted. He shook his head.

"Not yet. Let's get going."

Unenthusiastically, the Bouncer hopped after the two men. He liked this journey even less when several bodiless eyes flitted down from trees to vanish in the shadows, and when a ten-foot tentacle, equipped with suckers, writhed across their path. It came straight for Quade, and he blasted it out of existence with a well-placed explosive bullet. He examined the carcass.

"No trace of brain, is there? Those whitish threads—nerve tissue." He tried the electroscope again, and this time the gold leaf wilted.

The jungle had thinned as they climbed a steep slope. It straggled out into rank grass; then to a bare expanse of rock resembling quartz. The two men topped a little ridge, the Bouncer beside them. And they stood silent, staring down into a shallow crater.

Somehow, Quade was reminded of a group of machines, working steadily, inexorably, efficiently. Yet he knew that in the organisms below him was something more than created energy. Life dwelt in them.

In the center of the pit was a pool, in which a small gray object bobbed. A dozen feet away, ringing the basin, were five huge gray sacks, pulsing slowly. From them occasionally long tubes would uncoil, to reach out to the thing in the pool and remain fastened to it for a time.

Beyond the gray sacks, in another circle, were—the thought hit Quade suddenly—jaws! Roughly spherical, they each possessed a gaping orifice that spasmodically opened and closed. From them larger tubes connected directly to the grayish bags.

"Jumping Jupiter!" Wolfe said softly. "It's alive!"

PAST the two men scuttled a tentacle, carrying the writhing, kicking body of a Teapot. It ran to one of the huge jaws and thrust the reptile within. The mandibles closed with a cracking sound; when they opened the Teapot was mashed into fragments.

"What leverage!" Wolfe said. "It'd take a diamond drill to crack a Teapot!"

Quade nodded slowly.

"I think I get the set-up. Those jaws smash the food into bits and then push it through those tubes—see that peristalsis?" Little ripples were shaking the hose that connected the jaw they had been watching to one of the gray bags. "Push it to the stomachs. Those gray things are the stomachs—they've got the necessary digestive glands in 'em, naturally. And—see those humps on top? Lungs, I'll bet. In the stomachs the necessary fats, carbohydrates and so on are given to the blood, which is aerated through the lungs. Then the blood is given to that thing in the pool every so often."

"The thing in the pool—"

"It's the brain, of course," Quade answered Wolfe's amazed question. "Remember the electroscope? That's the answer."

"I don't quite see."

"You know what nerves are, don't you? Electrical impulses are sent along 'em to the muscles from the brain. There's a gap the nerve-impulses have to jump—the synapse, where the tissue doesn't quite connect. Well, if the electric potential can jump a tiny gap—why not a larger one, if it's given more power? Why can't it jump an inch—or a foot? And if it can jump a foot—why not miles?"

"You mean all those claws and eyes and tentacles are really part of this thing?"

"Sure. It's a logical evolution. The great terrestrial dinosaurs died because they couldn't move fast enough to get sufficient food. But in an organism more highly evolved, why couldn't perambulatory attachments

develop? Extensions of the parent creature, which could wander around to get food?

"There isn't much game on Mars, and a big animal couldn't exist. It'd be a destructive circle. It couldn't get food enough to create enough energy to travel enough to get enough food. Sounds crazy, but that's the answer."

Quade glanced down at the brain in the pool.

"That thing sends out electrical impulses that order its various extensions around. It sees with the mobile eyes. It's like a—a—"

"Like a jigsaw puzzle," Wolfe said, gulping. "Good name for it. Jigsaw! Think it's intelligent?"

"Lord knows," Quade grunted. "I don't think it knows we're here. None of its eyes is around."

He was soon to find himself wrong. The Bouncer, who had been jiggling frantically, clutched Quade's leg.

"Hunger," he said. "Tired. More—food. What? Danger? One—one—moving. Hurt me?"

Quade's jaw dropped.

"Wolfe, did you think that?" he snapped.

The youngster shook his head. "It must be—"

"Yeah! Bill's getting thought-impulses from the brain down there. Translating them into English, as well as he can. Come on, Bill. Spill some more."

THE Bouncer became violently excited.

"Food, food, food. Many . . . much. Grow. One, one, one—here. Away—one, one, one, one, one—"

He continued to count, while Quade frowned.

"Not so easy. I gather that brain knows we're here. 'One, one, one'—that's the three of us. But the other part—I know! He means the rest of the crew, back in the ship. Thinks we're good to eat."

Wolfe got out a gun. Quade shook his head.

"Wait a minute. Maybe we can communicate with this thing." He turned, staring down into the crater. "Hey, there!" he shouted, cupping his hands

around his mouth. "Can you hear me?"

No response. Wolfe said, "Tony, I know a bit about metals. I'm not sure that thing's flesh and blood."

"Eh? It uses blood—we saw that."

"That gray stuff that covers it isn't flesh. It's some sort of metal. If I had a spectroscope I'd be certain. But it's metal, Tony, I'm sure of that. Maybe flesh inside. Some combination of metallic ions with our own kind. There's metal in your body, you know that."

"Damn little of it," Quade said. "Iron's in everybody—but in very small proportions."

"I think that brain's covered with metal of some kind. Maybe no metal we know. Maybe in little plates, so the blood-tubes can get in to the brain arteries. There's radioactivity, I'm pretty sure; that would give you the power to jump a mile-long synapse. The electroscop—look out!"

A claw was edging tentatively toward them, flanked by an eye and a voice-bladder. The latter bellowed at them deafeningly. The eyes watched coldly, while the claw ran in and tried to bite Wolfe. He blew it to bits with a bullet.

A low buzz came from Quade's pocket. He drew out a flat box, touched a lever. It was a pocket radio, often necessary in interplanetary work, though its small size precluded use over long distances, and prevented installation of a television screen.

Kathleen's voice said urgently, "Tony? There's trouble on the ship. A lot of claws and things are attacking us."

Wolfe shot a tentacle and aimed another accurate bullet at the eye, which failed to dodge it.

"They can't get in, can they?" Quade asked. "Lift the ship."

"They dissolved the porthole-glass with something—some acid. The beryllium-steel keeps them out, but they got in the engine-room first of all. Some of the men got panicky and tried to shoot 'em. One of the engines is damaged. And they're all—well, a lot of 'em are in there, and the rest are busy with the portholes."

"Shoot them," Quade said. "Deal out the guns."

"We've done that. We can't use guns in the engine room—it may cause more trouble. Have to use axes. We're trying to get the things out, so the engine can be repaired. Are you all right?"

"Sure," Quade lied, shooting at an advancing claw.

"Hold on," the girl's voice said. "Be back in a minute."

"Not so good, eh?" Wolfe said. "Let's try for the brain. Though I don't think—" He fired down at the gray object in the pool. The bullet ricocheted. He tried another at one of the sacklike stomachs, with equal results. Then at one of the grinding, huge jaws. All seemed to be covered with the same curious metallic substance.

"See what a triple-charge will do," Quade said, stuffing a bullet into the chamber of his gun. All it did was to knock Quade down with the recoil. The brain bobbed slowly, undisturbed.

"They bite," the Bouncer said. "Eat them."

"I don't like the way that thing's thinking," Wolfe said with a flash of grim humor. Quade grunted.

"Maybe high explosive would worry it, but I doubt it, somehow. Hope we don't run out of ammunition too soon."

Claws, tentacles, eyes, and voice-bladders suddenly materialized from the forest. They converged on the two men.

"Good. One, one, one. Eat soon," the Bouncer said contentedly.

CHAPTER IV

Angle Shot: End of Jigsaw

ABOARD the camera-ship Kathleen was having a tough time. The vessel was surrounded by an avid horde of piecemeal monsters, intent upon capturing the occupants and dragging them into Jigsaw's various jaws. Each man had been equipped with guns, plenty of ammunition, and

an ax, and cautioned not to use the triple-charge cartridges within the ship.

Kathleen retired to the engine room, after seeing that each porthole had a guard. The tentacles could climb effortlessly all over the ship. They were giving ground somewhat now, and presently the last one was chopped into bits as he fled under a rheostat.

The men took their places at the ports of the engine room, while others set to work repairing the wrecked machine. Luckily, there were plenty of spare parts, and soon the motors were humming gently. Kathleen spoke to Quade via radio.

"Lots of 'em hanging on the hull, eh?" he said. "Well, turn on the gravity plates full speed. Circle around low—the atmospheric friction will cook 'em. Then come after us pronto." He didn't mention that he and Wolfe, fighting furiously, had been forced back unpleasantly close to one of the grinding jaws. The Bouncer was far from encouraging. Whenever he spoke, it was merely to relay the brain's avid anticipation of more food.

HOW much ammunition have you got left?" Wolfe asked. "I'm down to my last clip."

"Two more," Quade groaned. "Look out!" He fired two shots in quick succession. "Almost got Bill that time." The Bouncer, with a horrified glance at the jaw, not a dozen feet away, squeaked shrilly and took a strangle hold on Quade's leg.

"God bless Von Zorn," Quade said under his breath. "Wait until I see that fat-headed baboon again—if I ever do. I'll—"

With a scream of displaced air the camera-ship flashed down from the sky. It hovered as Quade spoke urgently into the transmitter. A moment later a rope ladder was dropped, and Quade said, "Get it, Wolfe! I'll guard you—your ammunition's gone."

After a second's hesitation Wolfe obeyed. Quade emptied his gun, threw the useless weapon at an advancing claw, and went up the ladder like a cat, with the Bouncer hanging to his leg

with a grip like a steel-trap.

"All gone," the creature said sadly as he was drawn through the porthole. "No food. Too bad."

That, apparently, was Jigsaw's reaction, broadcast to Bill's receptive mind.

The huge platform in the ship's transparent nose was crowded. All were staring down at the fantastic brain in the pool, and the organs that surrounded it. Kathleen hurried up.

"Are you hurt, Tony?"

"Nope. Are you? . . . Good. Looks like we came off okay—or did we?"

"Four of the men were bitten, but the doctor says they'll be okay. He's got an anti-toxin—says the bites injected a poison similar to formic acid."

"Yeah," Quade said thoughtfully. "We're up a tree now, though. We've got less than a week to finish *The Star Parade*—"

"Can't we do it somewhere else on Mars?"

"No. The sets are all built, and it took a month to put them up. We've got to finish shooting back at camp. But those animals—there must be thousands of them. We can't shoot 'em one by one as they appear. I wouldn't ask the crew to work out in the open under such conditions."

Ailyn Van came up hastily, her platinum eyes wide. She caught sight of the Bouncer, who was peering dispiritedly at his furry stomach.

"Nice and warm," he said miserably.

Ailyn gasped and made a dive for Bill. She fumbled in his coat and brought up an object that suddenly turned a shell-pink to match her hands. It was Picasso, who had been a stowaway on the Bouncer since he had left camp.

"You naughty, naughty little Picasso," Ailyn crooned tenderly. "I thought I'd lost you. Why, you might have been killed." She turned to Quade. "Tony, you saved his life!"

BEFORE Quade could answer Wolfe put in hurriedly, "I'll say he did! One of the claws was dragging Picasso right into a jaw when Tony killed it. Risked his own life doing it, too."

Ailyn turned glowing platinum eyes on Quade.

"I can't thank you enough. Tony —" She came closer, looking somewhat ashamed of herself. "I've been pretty nasty, haven't I?"

"Darn right you have," Kathleen said, but Quade shushed her with a warning gesture. "Yeah," he said. "But after all you're an artist. I guess I haven't been easy to get along with."

"Oh, it wasn't that. It was me. I'm sorry, Tony. I—it'll be different from now on."

And she meant it, Quade knew. He sighed with relief. However, there still remained Jigsaw—and the Inferno! In the stress of events he had almost forgotten about filming the cavern of the energy-storms.

"Wolfe," Quade said, "I think I've figured out our friend Jigsaw. He broadcasts thought-commands to his various organs—and he does it by way of radioactivity, that's pretty sure. A thick coat of lead should stop that, eh?"

The lanky blond stared for a moment, and then grinned widely.

"You got it, Tony! That'll keep him from jumping the synapse. Same as lead will shut off radium rays. Even the powerful gamma rays . . . but how'll we do it? Electrolysis? We'd have to pump a lead nitrate solution into the pool first."

"Electroplating's too slow," Quade said. "Molten lead will do the trick. We'll use the metal spray guns."

This was done. The giant guns, useful in constructing sets, took thick feed wires of lead into their mechanisms, melted the metal by acetylene blasts, and sprayed the molten stuff under powerful pressure from their muzzles.

A platform was rigged underneath the camera-ship, and the spray guns were lowered by long poles, easily manipulated by the men above. White-hot lead showered on Jigsaw. As it hardened a thick coat was formed, and presently the spherical brain was cap-sized by the weight. Immediately the crew began to spray the surface now exposed to view.

"Jigsaw's in solitary confinement,"

Quade said, peering down through the transparent hull. "His thought-impulses can't get through the lead shield and reach his organs—the claws, eyes, and the rest. They haven't any brains, you know. Just receiving nerve tissue."

Something was certainly happening to Jigsaw's mobile organs. They were gradually ceasing to move, while the bellows of the sound organs grew fainter and stopped entirely. In half an hour Quade recalled the men, convinced that Jigsaw was so thoroughly coated with lead that he was now harmless.

"Everything's ship-shape," he told Kathleen. "Maybe the lead will wear off Jigsaw in time, but we'll be through *The Star Parade* by then—" Quade paused, frowning.

The girl nodded sympathetically.

"You mean the Inferno?"

Wolfe came up, the Bouncer hopping at his heels. "It simply can't be filmed, Tony. You'd better tell Von Zorn to fake it. The armor's no good. Nothing can live in the Inferno."

Quade looked at the Bouncer, and his eyes slowly widened. Bill blinked uneasily and took shelter behind Kathleen's ankles. "For Pete's sake!" Quade said at last, his voice unsteady. "What a sap I am! It'll work—sure it'll work! And I had the answer right in my lap all along!"

WHAT?" Wolfe's tone was skeptical.

Quade turned to the girl.

"Kate, remember when we first saw a Teapot? On the rim of the Inferno? When one of Jigsaw's eyes and claws chased it down into the energy currents?"

"Yes. But—"

"The Teapot died—its brain was burned out. But the claw wasn't hurt, or the eye. Of course not! Neither of them had a brain. Just conducting nerve-tissue. Wolfe, maybe that's the explanation of Jigsaw's metallic body and his radioactivity."

"You mean—oh! Adaptation!"

"That's it," Quade said. "Living right near the Inferno, Jigsaw slowly adapted himself to the radiations."

Built up resistance against it. A radio-controlled robot would go haywire in the crater, but not a creature controlled by thoughts—telepathy. I'll bet Jigsaw's mobile organs can go anywhere in the Inferno without being hurt."

"That doesn't necessarily follow," Wolfe said slowly. "The rays are more powerful the deeper you get."

"Yeah . . . but rays that would burn out a brain mightn't act on less specialized nerve-tissue. We've got to take the chance."

"All we have to do is send down a claw with a camera strapped to it," Kathleen said wryly. "A fat chance."

"That's right," Wolfe seconded her. "We can't control the mobile organs the way Jigsaw did. Our radio robot-controls won't work on living creatures."

"That," Quade said with satisfaction, "is where Bill comes in. The Bouncer has a highly developed telepathic function in his brain. He can broadcast thoughts as well as receive them. We found that out when he ate some of Stover's benzedrine. He controlled Picasso with his mind, and Picasso has a brain—more or less. Jigsaw's organs have just got specially adapted receptive nerve tissue, so that ought to be even easier for Bill."

CHAPTER V

Fade-Out: The Big Scene

AN hour later the space ship lay grounded near the crater of the Inferno, while Bill was the center of a small group near the rim. He kept looking around in a worried manner, occasionally scratching his stomach. He was full of benzedrine.

"It's a very powerful stimulant," Quade had explained. "It was known a long time ago—benzedrine sulphate—but lately it's been improved considerably, so that it steps up the brain to a tremendous extent. It ought to pep up Bill's telepathic function a lot."

It did. The largest tentacle had been carried along, and an automatic, spring-powered camera was attached to it. Several of Jigsaw's eyes lay near by. Quade squatted before Bill, who looked up at Kathleen inquiringly.

"It's okay," she told him. "Tony won't hurt you. If he does I'll wring his neck."

"Look," Quade said. "You're pretty intelligent, Bill. We know that. So try to understand." He knew that his words were meaningless to the Bouncer, but the creature was receiving his thoughts and comprehending them. He explained to Bill what was wanted.

The Bouncer looked stupid. Quade went over the whole matter again, with no result. Eventually Bill murmured, "Candy?"

"I thought so," Kathleen said. "He understands you all right, Tony. The little crook is holding out on us." She fumbled in a pocket, brought out a piece of chocolate. The Bouncer ate it appreciatively and said "Candy?" in a hopeful way.

"Not now," the girl told him. "You'll get lots of candy after you do what Tony wants."

Bill hesitated and then turned toward the remnants of Jigsaw. He stood perfectly still for a moment—and one of Jigsaw's eyes moved.

It stood up on its tiny legs, wavered a minute, and fell over. But it got up again, and the other eyes, too, joined it.

"Now the tentacle," Kathleen prompted.

The Bouncer obeyed. The snake-like object squirmed slowly, and writhed toward the lip of the crater. Quade sprang after it.

"Hold on a minute!" he called, and pressed the switch that started the camera, strapped tightly to the tentacle, unreeling its spool of film.

He straightened, frowning.

"This isn't going to be easy. Bill can control the tentacle and the eyes, and he can read my mind. He'll be a relay station, forwarding my thought-commands to the organs. He can probably see through Jigsaw's eyes, the

same as Jigsaw could—but I can't. Unless Bill helps a lot, I'll be working blind. Anyway—here goes!"

Quade turned to the Bouncer, trying to marshal his thoughts into coherent orders. The tentacle writhed over the lip of the crater and started down, the eyes scampering after it.

No one spoke. All were watching Quade and the Bouncer. As long as the tentacle was visible the task wasn't too difficult, but presently not even binoculars could penetrate the depths in which the camera-laden messenger had vanished.

Quade's face was damp with perspiration. He was rapidly acquiring a severe headache. Bill's round eyes, now slightly glazed, were intent on the man.

"Keep going," Quade was thinking. "Down. Till you reach the Inferno. Keep going . . ."

IT seemed years later when Quade had a queer, inexplicable conviction that the tentacle had found its goal. He stared at the Bouncer, who jiggled slightly. Had Bill projected the thought into his mind? Quade wondered.

"Keep moving around," he commanded mentally. "All around. As many angles as possible . . ."

At last Wolfe touched Quade's arm. He pointed to his watch. The can of film was nearly finished.

"Come back, now," Quade said, unconscious that he was speaking along. "Make it quick. Hurry—"

The headache had increased to a blinding, agonizing throb within his skull. He fought against it, desperately trying to keep his thoughts coherent. He lost all comprehension of time, and when the tentacle writhed over the edge of the crater Quade stared at it for a while without realizing what this meant. Slowly understanding came to him.

The Inferno had been filmed—for the first time! If—and the thought chilled him—if the pictures developed okay. Quade swayed dizzily, felt the mouth of a flask thrust against his teeth. He gulped, felt the revivifying sting of brandy on his palate.

Wolfe was carefully removing the camera from the tentacle. He said absently, "The eyes didn't come back. The radiations probably did for 'em. There's considerable brain tissue in the retina, anyway—"

The Bouncer hugged Kathleen's leg. "Candy?" he questioned greedily. "Candy?"

THAT night, on the space ship, the developed shots of the Inferno were run off. They were amazingly clear. The specially treated film, and the filter-lenses of the camera, had taken care of that.

Everything was there—the descent down the crater into the cavern of the energy-storms, astounding shots of the long-ruined Martian city, ablaze with the thundering, flaming currents that roared up from the depths below, and the final ascent back to the surface. Quade was grinning happily as he sat in the projection room, Kathleen beside him.

"Those scenes would make a smash hit out of the corniest flicker ever made," he observed. "They'll dub in sound on the Moon, and get the actors in with double-exposure shots. Von Zorn will go crazy over this stuff."

"That cleans up everything," Kathleen said. "Especially as you won't have any more trouble with Clint and Edith."

"Eh?"

"The gal fainted when Jigsaw attacked the ship. I laid her out in my stateroom and fixed it up with the doctor to tell Clint she'd been bitten by a claw and was plenty sick. He nearly went crazy. And when she woke up and saw how he felt—all was forgiven. It'll be a month before they start fighting again."

Quade drew a deep breath of relief. *The Star Parade* would be completed on schedule.

Jigsaw, completely plated with lead, remained in his pool, doing his best to send out nerve-impulses and wondering why he wasn't receiving any.

Clint Padrick and Edith Rudeen were in each other's arms in Floyd Stover's cabin, listening to the latter's

interpretation of *Macbeth*.

Wolfe was grinning from ear to ear as he worked on his beloved cameras.

Quade was contemplating kissing Kathleen, and she was wondering why he didn't hurry up about it.

Ailyn Van was looking for Picasso.

And the Bouncer was trying to figure out whether or not Picasso was clinging to some portion of his anatomy.

Bill had been given an antidote

that destroyed the effects of the benzedrine, so he couldn't control the little creature with his thoughts. Exploringly he examined his rotund middle.

Apparently no stowaway.

Bill's furry shoulders lifted in a deep breath of relief—and then sagged in utter misery as he found himself murmuring,

"Nice and warm. Nice and . . . warm."



IN THE NEXT ISSUE

THE TELEPATHIC TOMB

A Novelet of Secret Forces

By FREDERIC ARNOLD KUMMER, JR.

AND MANY OTHER STORIES AND SPECIAL FEATURES



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HYPERCOSMOS

A Short Jaunt Among the Stars

By **C. P. MASON**

*Author of "Rambling Through the Solar System," and
Many Other Authoritative Articles on Science*

AN article of rather fantastic nature, in the preceding issue of this magazine, described the proportions of the Solar System, by supposing a being large enough to walk between the Sun and its planets, comparing their respective sizes and masses, and estimating their respec-

tive distances and motions. He was represented as a giant, capable of holding the Earth in one hand, and of walking with the speed of light.

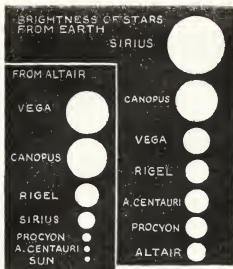
Such a being could travel from one planet to another in the course of a few hours; and, to him, some of the minor planets, or asteroids, and the



To a being to whom our Sun would seem but an inch in diameter, and the universe reduced to that scale, the stars would be hundreds of miles apart; and he could hold in his hand all the matter in a billion cubic miles.

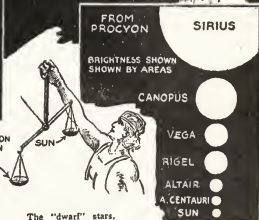
The stars differ a billionfold in their light, and their bulk; but their masses vary comparatively little. Betelgeuse is almost a vacuum.

An Interstellar Traveler Races Through



Some stars seem bright only because close by; others, which are a long ways off, are really very big. From our Earth, we see Sirius brightest and Canopus next; but when Sirius had sunk in the distance to a second-rate star, the giants Canopus and Rigel would hardly be changed. (Areas proportioned to apparent brightness.)

COMPANIONS OF SIRIUS AND PROCYON WEIGH DOWN SUN TEN THOUSAND TIMES LARGER



The "dwarf" stars, no bigger than the planets of our Sun, are of matter so dense that they contain nearly as much weight each as our Sun.

smaller moons, would be only grains of dust, too small to be seen readily.

But such a giant would be as much too small to make a survey of the stars, even in our immediate neighborhood, as we are to go on a morning ramble among the planets. It is not the sizes of the stars themselves, though some are stupendous as compared with the Sun, but the distances between them that would baffle our supposed Micromegas (the name of the superplanetary giant). We must suppose a second giant, of a much higher order of magnitude, to whom the Sun itself is a plaything.

Sixty Million Miles Tall

LET us introduce Hypercosmos, the interstellar traveler. He can hold the Sun easily between his thumb and forefinger, like a large nut. It is, to him, one inch in diameter; and throughout this article, we shall preserve that proportion for all distances.

Therefore, to Hypercosmos, 10,400,000 miles is a foot; he stands 60,000,000 miles high and, when he stretches his arms out, with one fingertip on the Sun, the other almost touches the planet Venus in its revolution.

Super-Gravity

BUT Venus is only 1/115 of an inch in diameter—a mote in the sunshine. Hypercosmos could thrust all the planets, except Jupiter and Saturn, under his fingernails, if not "in his eye," and be unconscious of their presence; those two largest planets, 1/10 and 1/12 inch, respectively, are little bigger than pinheads.

We supposed Micromegas to be unaffected by heat and cold, able to travel in any direction through empty space. We must do the same with the larger traveler, Hypercosmos, and we must also suppose that he is made of very different substance

the Void, Defying the Laws of Einstein!

from the matter which we know. For, not only would it be impossible to set such a mass of matter in motion at the required speed, but the attraction of a body thousands of times greater than the Sun would upset the Universe.

When Hypercosmos approached the Sun, it would explode and flatten itself against him, drawn by his superior gravitation. The planets would rush to him, like steel to a magnet. In his progress, he would accumulate stars and systems, sweeping them up from his path.

Micromegas walked at a steady pace among the planets; Hypercosmos must run among the stars. We give him a speed, in proportion to his size, of an Earthly runner traveling a mile in five minutes—this corresponds to *one thousand times the velocity of light*. This speed, we shall find, is none too great for an exploration of the immediate region of our Sun in the Galaxy, or star cloud, of which it is an insignificant member.

Shall we suppose that Hypercosmos has a map—a three-dimensional one, like a glass ball with specks scattered through it—of the neighborhood? If he turns from the Sun toward the nearest star, it will not be the brightest; there are two—Sirius nearby, Canopus far away—which are brighter.

But, with a correct sense of his bearings, he darts toward *Alpha Centauri* a star seen only from the southern portion of the Earth. This takes him down at an angle of about 45° to the belt of planets circling the Sun; but in half a minute he is out beyond the orbit of Pluto, and the Sun is dwindling fast in brightness.

On the scale we have selected, the Sun is represented by a ball one inch

in diameter, but it shines with a candlepower of twelve hundred thousand. The Sun, we must remember, is hotter than an electric arc, and radiating three times as much light per square inch of surface. We see it, through our atmosphere, as a yellow star; but out in space we would find it decidedly bluer.

The Brightest Star

FOR miles and miles Hypercosmos darts along, unceasingly, unrelenting, until he has been running for seventeen hours, without stopping, straight toward his mark. He looks back over his shoulder. The Sun, which has been continually shining behind him, is no longer the brightest star in the sky.

It is now just equal in brightness to the star toward which his course has been directed; and off to one side is another star—the brightest, next to the Sun, as seen from the Earth. Sirius now appears brighter than either the Sun which he has left, or *Alpha Centauri*, which he is approaching.

Hypercosmos dashes on; he has a long way to go. He has outdistanced the light which left the Sun two years before. As for the light reaching him from *Alpha Centauri*, it would be hard to picture the effect at his speed on its rays; we have defied the laws of Einstein, in giving Hypercosmos a speed greater than that of light. He has been running for nearly thirty-six hours, with *Alpha Centauri* growing steadily brighter; and he observes that, among the thousands of stars, one dim one is shifting its position with a rapidity that indicates it is very near.

He diverges from his path to investigate it; it is, as a matter of fact,



PROXIMA

NEAREST STAR A $\frac{3}{4}$ INCH
BALL, SEEN 424 MILES AWAY
FROM INSIDE AN 18 FOOT CIRCLE



about fifteen miles off his road. The nearest star to the Sun is *Proxima*; it is a little reddish ball $\frac{1}{4}$ inch in diameter, and gives only about 120 candlepower, but is visible to the eye, in starlit night, for many miles. If we give the Sun $\frac{4}{10}$ of an ounce weight (that of a one-inch ball of its density) *Proxima* weighs probably less than ten grains.

It is a "red dwarf" star—one almost burnt out—and presents little of interest. Separated from its bright neighbor by a distance three hundred times that of Pluto from the Sun, it is nevertheless moving with *Alpha Centauri* through space and, in the course of time, will presumably revolve quite around it.

Alpha Centauri is now the brightest object by far in the heavens and, as Hypercosmos approaches, he notices an odd fact. Instead of one star, he sees clearly that there are two—one much brighter than the other. Presently he is again in a glow of daylight, such as surrounded the Sun.

Alpha Centauri A—the brighter star of the two—is even more brilliant than the Sun, by about 12 percent—and very slightly larger. The two would be almost twins. But *Alpha Centauri B* nearly as heavy as the Sun and larger, is only a third as bright. It is about two hundred feet from its companion star—nearly as far as Neptune from the Earth—and, if Hypercosmos should wait, he might see that the two stars are revolving around each other in a period of some 80 years.

Companion of Sirius

BUT our space-runner does not wait. He looks at the starry heavens; few stars have changed

greatly in brightness since he set out, and those which have done so must be nearby, he knows. Our Sun is now only the ninth or tenth in brightness, instead of first, or second, but Sirius is still blazing brightly, and he resumes his unresting course.

It is over a thousand miles to Sirius, ninety hours of incessant run, and Sirius and its bright neighbor star, Procyon, keep increasing in brilliancy. Yet, in all his long chase, the star Canopus (which was next in brightness to Sirius when he left the Sun) has changed but little; he knows that Canopus, perhaps eighty thousand miles away, is too distant for his attention.

When he comes within a few miles of Sirius, he sees that star too has a faint companion. But, while the twin stars of *Alpha Centauri* differ in brightness on the ratio of but four to one, the companion of Sirius is only one ten-thousandth as bright as its primary; and it is lost in the rays of the latter's light until one approaches it closely. Procyon, in the meantime, has become apparently brighter than Canopus.

Sirius is twenty-six times brighter than the Sun; eighteen times brighter than the pair of *Alpha Centauri* put together. But in diameter, Sirius is little larger than the Sun; it shines with the light of a more intense heat—thirty-two million candlepower in a ball a little over an inch and a half times that of the Sun. The companion, 180 feet away, revolves around it in 50 years.

The companion of Sirius is a "white dwarf"; it is hardly more than a pinpoint, yet its mass is almost the same as that of the Sun. It is thousands of times denser than any matter of which

we know; yet it is not solid, but gas.

If Hypercosmos were a physicist, we could imagine him taking the strange white dwarf apart, under a microscope, to solve its mystery. Instead, he starts for Procyon, eighth brightest of the stars as seen from the Sun, and here outshining all but Sirius.

In a little over thirty-nine hours he reaches it, and finds that Procyon,

too, has a dwarf companion. But while Procyon, a little heavier than the Sun and nearly twice its diameter, is $5\frac{1}{2}$ times as bright, its companion is more than thirty thousand times dimmer—36 candlepower compared with 6,600,000! It too is incredibly massy.

Indeed, there are more things in Heaven and Earth than are dreamt of in our philosophy!

FORECAST FOR THE NEXT ISSUE

THE body was stranded in absolute time. For almost an eternity it had remained in a state of suspended animation, protected by a wall of electronic matter. Three centuries later the unleashed powers of super-science annihilate time's barrier . . . and a girl from the forgotten past finds herself in a bewildering future.

That's the whirlwind start of **THE TELEPATHIC TOMB**, the feature novelet for the next issue of **THRILLING WONDER STORIES**. It's by **FREDERIC ARNOLD KUMMER, JR.**, and the way in which the author unreels his story and sweeps on to a dramatic climax that's tops in science fiction will hold you breathless!

* * *

PHOTOSYNTHESIS—a mysterious bio-chemical process invented by Nature—is responsible for the growth of the entire plant kingdom. By means of photosynthesis plants convert the sun's energy and the raw materials in the ground into food and substance. But also—the plants must use the carbon dioxide free in our atmosphere.

Suppose the carbon dioxide present in the air were gradually to seep away, to vanish . . . so that eventually all plants withered and died? Inevitably mankind would disappear from the face of the Earth.

Such is the problem confronting the scientists of the future in **MAX SHERIDAN'S** novelet of super-evolution, **THE HUMAN EQUATION**.

* * *

WHEN Archer Lakington had set out from Earth in 2136 to search for new worlds or plane-toids worthy of future prospecting by the American Interplanetary Corporation, he had certainly not expected to roam through the depths of space for six years.

At any rate, Archer Lakington happened upon the billion-to-one planet—a sphere whose chances for existence in the Universe were a billion to one. Yet on this hybrid planet chance was an impossibility. Everything happened one way—it was a **WORLD WITHOUT CHANCE**.

Written by **POLTON CROSS**, we're certain that **WORLD WITHOUT CHANCE** is an interplanetary novelet that will remain in your memories for keeps.

* * *

THE tenth anniversary issue of **THRILLING WONDER STORIES** will soon be on hand, and the forthcoming issues of our magazine are paving the way for the biggest event in the science fiction year. Included in the next issue will be many other science fiction novelets and short stories by popular authors, plus the regular parade of all our star features.

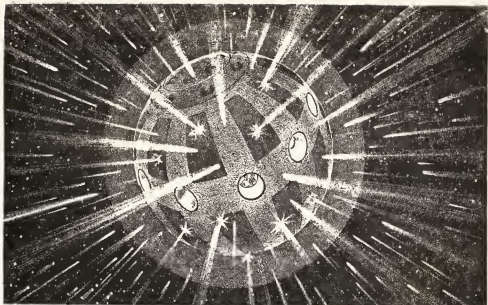


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There were the on-rushing dwindling stars

THE GREAT ADVENTURE

Georg Arpin's Scientific Experiment Plunges a Mighty Space Ship Through the Outermost Realms of Infinitude!

By **RAY CUMMINGS**

Author of "The Space-Time-Size Machine," "Around the Universe," etc.

THE blazing black firmament, to young Thom Dohn, had never seemed so beautiful as now, these first hours on the flight from Earth to Mars. The eight-ton alumite spaceship, *Starflight*, seemed hanging poised, centered in the vast globular abyss of black space—a little world of itself, with sunlight, earthlight and all the light of myriad blazing stars glistening on its sleek hull.

Never so beautiful, this familiar celestial scene. But Dohn knew that the glories of interplanetary space on every trip he had made were always like this. It was an unchanging, unchangeable scene; the glory of infinitude, making him seem so small, so unimportant.

The knowledge that something was wrong with the *Starflight* came to Dohn with the feeling of the deckgrid shuddering under him. Like the aura of a purple flash from a Banning gun, a play of deranged electricity leaped past him. It crackled, expanded, gathered like purple balls of St. Elmo's fire on the minaret spires of the control turret.

The shouting of the frightened passengers mingled with commands from the startled ship's officers, Dohn, himself a passenger, found himself with the group that milled before the control turret. The great dome of blazing firmament was slowly turning now. The ship was off her course, rotating end over end! Wrecked in space! A

hurtling derelict.

The deranged electricity for a minute or two hissed and crackled with ionized air, leaping in glorious purple balls. But there was no glory to Dohn; just confused terror.

Then the electronic crackling went dead. And in the sudden silence there was a despairing, confused shout from the navigator chief.

"We're all right! The air and pressure mechanisms are unharmed."

A derelict on which one might breathe, and eat and drink until the food and water gave out. A derelict, hurtling—somewhere. Lost in infinitude.

Somebody beside Dohn must have mumbled that.

"Not by accident!" came the answer. "I did it! I wrecked us, so you couldn't stop our great adventure!"

Here among them was old Georg Arpin, wild-eyed, waving his arms. He was the designer and builder of the *Starflight*—largest, finest space ship so far constructed. And this was the maiden voyage, with Arpin on board—a madman, dancing with exultant, frenzied glee, his face contorted as he shouted:

"I did it! Kill me now if you like! You can't stop what's going to happen. I built into this vessel my great discovery. An electronic force that is expanding us in size! The *Starflight* and everything and every one of us humans within the aura of the magnetic field which is around us—all growing larger! Can't you see the aura?"

HIS wild gesture made Dohn and them all stare past the glassite dome to where in space, close around the vessel the dim, mysterious yellow-green aura was apparent.

"I did it! Our size is changing. Every second, in geometric ratio, we are doubling our size!" A madman. But was he? "Soon we will be as big as Earth! Then twice that! Four times that!"

A madman. But he was only mad with lust; lust for the great adventure—the lust of science to probe the unknown.

The navigator chief had seized him now; but still he screamed:

"All right, kill me! That's all you can do. Like you, and you, and you—all of us helpless to do anything except *get larger*—size gigantic! Our great adventure into the infinity of largeness!"

The navigator chief did not kill him. He was an old man, this builder of spaceships, with a frail and ailing body; and the frenzied rush of his lustful passion snapped something within him so that suddenly his wild words choked in his throat and he went limp in the navigator chief's grip, with goggling mouth and staring glazed eyes that still seemed trying to see his great adventure.

Arpin died. And with him died the knowledge of how he had done this thing that to Earth, Sun, and all the starry Universe was destined to bring destruction!

The most momentous catastrophe of which the human mind can conceive was at hand. But by instinct, to each man himself is the center of the Universe.

To Dohn came a numbed terror. For a day of the ship's Earth time routine, with the others on the doomed vessel he ate and drank and slept a little; and numbly watched the amazing cyclorama of the changing firmament. But other days came and passed, and even the knowledge of inevitable doom can be accepted. There were times when Dohn would sit and watch, just awed, and then almost trembling with eagerness to see more, and more.

The gem-strewn firmament with its background of domed blackness rotated slowly. Then it steadied. Earth was a distant, small, mottled yellow-red crescent, with the moon just a little shining dot. The Sun was to one side. And, quite suddenly, it seemed, Dohn realized that of all the apparently unchanging scene, Earth was changing.

He stared. Surely that crescent Earth looked smaller than it had a moment ago. A shrinking crescent, steadily dwindling. And the dot of the moon was dwindling. Already it was like a star of so small a magnitude that it trembled, almost beyond visibility.

Then, when he blinked and looked again, the moon was no longer there. Too small now to be seen.

To Dohn it was as though the *Starflight* must be speeding away, so that the moon vanished and the image of the receding Earth was dwarfing by distance. For a long time he watched while the Earth crescent shrank to a little blurred point of light. The Sun too, was shrinking, seeming to draw away. And Venus, Mars, and the blazing glory of Jupiter—all seemed receding.

Then, with a shock of amazement and awe so great that he forgot his terror, Dohn abruptly saw the reality. Earth, Sun, the other planets of the Solar System were not further away. They were closer—incredibly closer—and tiny, despite their proximity.

THE great distant stars had seemed unchanged. But presently, everywhere in the firmament motion was apparent. The planets, myriad blazing stars, the trailing sweep of stardust of the Milky Way, itself a billion, billion giant worlds; the gigantic, infinitely remote star clusters, the tremendous nebulae—all were in motion.

As though compressed by some Titanic force, visually they seemed shrinking. The dots of them were merging into little patches, and the glowing patches themselves were all coming together and shifting closer.

Venus had been a crescent a moment ago; now it was too small for that, so that it became a dot again. Sun was a round, blazing small ball. And here was the tiny glowing ball of Earth; an Earth not a million miles distant now, for Dohn saw it out there beyond the *Starflight's* stern, seemingly no more than a mile away!

Through the momentous hours the *Starflight* hung poised, throbbing, quivering with its weird electronic aura enveloping it. And Dohn knew now that it was a monstrous thing, ever becoming more monstrous.

The crawling, dwindling, shrinking of all the scene went steadily on. The vast infinitude of space! Dohn heard himself laughing hysterically. Why, here were Mars, Saturn, Jupiter, Ura-

nus, Neptune, Pluto and all the rest—the whole little Solar System was hovering here with the *Starflight* in the midst of it. But these were just tiny glowing models of worlds, miniatures hanging so close that you might measure their distance in feet, and so small that he might have held some of them in his hand.

Then he could see that their oncoming was a rush, a hurling forward as they were drawn inexorably by the gravity pull of the Titanic bulk of the *Starflight*. There was Earth, the first to come.

Just a few minutes ago he had guessed it might be a ball fifty feet in diameter. Then it had been no bigger than his own body; and then it was small enough to hold in his hand. Clouds enveloped it as it hurled itself forward. Behind those clouds, what horrible scene of human terror must be transpiring!

The destruction of Earth! Titanic catastrophe!

But Dohn was laughing with wild hysteria. Here came Earth—an insignificant ball that one might catch in his hands. Why no, in another few seconds it was even smaller than that. A pea. A tiny thing that swooped like a grain of metal drawn by a great magnet; swooped and struck against the fin of the *Starflight*.

The destruction of Earth! Momentous catastrophe! But Dohn saw it as a tiny puff of light, a spark that flared for a split second and was gone!

Then the other planets came. Tiny puffs at the impact. Sun was a speck of glowing gas that briefly puffed as it hit the *Starflight's* hull.

Momentous destruction. The Solar System was gone! Monstrously the poised *Starflight* occupied the space where seconds ago the Solar System had been.

And then here were the on-rushing, dwindling stars. Numbed, Dohn and all the other humans on the monstrous vessel sat and watched the bombardment.

From above, below and to the sides, incredibly swift now and every instant accelerating, the tiny points of light came rushing.

THE destruction of the Universe! But the shining hull of the *Starflight* only showed infinitesimal dots of burned smears where they struck. And watching them, Dohn saw myriad little light flares, each to mark the end of a world!

Then at last the bombardment was thinning. The end of the Universe? Why, it had been more than one Universe. The black void of space had yielded a dozen patches of huddled stardust, each itself a universe. Little glowing patches that for an instant as they whirled close had shown themselves to be a billion-billion specks of worlds that showered against the *Starflight* almost unnoticed.

Then there were intermittent showers, almost too small and vague to be seen. Each had been a universe with myriad individual worlds, some of them larger than the diameter of the Solar System. But they impinged on the vast hull of the *Starflight* now like grains of dust whose destruction was too small to notice.

And then at last it was over, and Dohn saw only the dark, black void of empty space. But was it wholly dark? Was it empty? Slowly he came to realize that color everywhere was beginning to glow in the blackness. A gray. A vague, silvery gray. Then green. A faint, prismatic sheen. Everywhere in this vast enclosing dome of infinity, now there was color.

Again, quite suddenly, Dohn's viewpoint changed. There were vast shapes of something to be seen now, everywhere in the immensity of the enclosing firmament dome, as though here were not empty space but a vast concave enclosing surface of something that might be solid—like the inside of a hollow ball, with the *Starflight* poised in its center.

He had thought all that, just a moment ago. But now his viewpoint changed, and abruptly he realized that the circular remaining space about the *Starflight* was no longer vast! The distant enclosing surface that might be solid was not distant!

Ten miles away? Or only one mile? What difference? The whole scene was shrinking. Everywhere there was

that prismatic, concave aspect of solidity—above, below and to the sides. And the *Starflight* hovered, throbbing, filling all the little emptiness that was left.

And Dohn was numbly staring at the enclosing solidity that now was so close. A moment ago he had thought he was seeing Titanic molecules, monstrous things that crawled and whirled and pressed near each other. There had been space between them. It was a solidity that was not solid.

For a moment he had almost thought that the *Starflight* might have threaded its way into that crawling, jostling throng. But the spaces off there were shrinking. Everything visually was seeming to pack together.

The creation of matter! Visually it seemed now that here was the creation of solidity, taking place before his numbed gaze. Here was color. The prismatic color of glowing electrons, atoms, molecules, optically compressed now into what the human mind conceives to be solidity.

That last hour held for Dohn only a blurred confusion. On the quivering *Starflight* the little group of humans—the last humans—stared at their doom. Some prayed. Some raged. Some screamed. And some, like Dohn, sat numbed while the last little remaining emptiness of space closed in upon the *Starflight*.

There was a brief, horrible time of a chaos of sound and light; and then darkness and silence as Dohn was hurled into Eternity.

The end of everything. Destruction of all the Universes—the most momentous catastrophe of which the human mind can conceive. . . .

IN the big shining laboratory where the males of scientific work were gathered, the young male Orkk sat and watched what the males said was a most interesting scientific happening. The young Orkk was mildly interested, but mostly he was thinking of the young female he was destined to mate.

Here on the shining raised place, the males of scientific work were watching with their instruments a grain of

matter in which it had been discovered that something unusual was happening.

One of them was telling about it now to the assembled group of listeners. Something was to be seen in that tiny grain of matter; something that had no right to be there.

An enlarged image of the particle showed, by projection on the shining side-wall of the big laboratory; and the young Orkk idly gazed at it.

The leading male of scientific work was excited. The alien thing which had appeared in this particle of matter, so small a thing that the humming instruments of magnification could barely see it, was growing. And it had no space in which to grow.

Orkk was thinking mainly of the beauty of his young female. But he did see the tiny puff as the particle of matter finally exploded. The generated

heat of the conflict within it had caused it to unite with the atmosphere here in the laboratory.

The sound was nothing. The brief, tiny puff of light was so small that even the enlarged image of it on the big shining wall here, was barely visible. The speck of matter was destroyed. The tiny gases from it were dissipated into nothingness in the big laboratory.

To Dohn on the *Starflight* that had been so momentous a catastrophe! But the young Orkk was thinking that the males of science were foolish to be interested in such an infinitesimal happening in the infinity of smallness.

He thought of his young female as his gaze drifted to the laboratory's big window. The shining scene out there was beautiful. The firmament of distant glowing Universes—infinity of largeness—was glorious, and important.



In the Next Issue

THE HUMAN EQUATION

A NOVELET OF SUPER-EVOLUTION

By MAX SHERIDAN

**ENRICHES THE FLAVOR
OF ANY TOBACCO**

HONEY IN
THE BOWL
(Yellow)



YOUR
NEXT PIPE

\$1

YELLO-BOLE

Yello-Bole has *real honey in the bowl*. The honey seeps into the briar wood as you smoke, and *keeps on* blending its flavor with the pipe. Result: Yello-Bole starts sweet, *stays* sweet. You spend \$20 or more a year for tobacco, and \$1 spent on Yello-Bole will make tobacco much more enjoyable.

REG. U. S. PAT. OFF.

Science Quiz?

A BRAND-NEW FASCINATING FEATURE

ARE you up on your Who's Who and What's What in Science? Here's a chance for all you walking brain-trusters to match wits with the experts behind **THRILLING WONDER STORIES'** exciting question and answer game in a mental tug-of-war. After you've found out your own score, test these problems, puzzles and bafflers on your friends—that is, if you have any! Don't consult the encyclopedia for the correct solutions; turn to page 129.

POSITIVE OR NEGATIVE

The following statements are either true or false. And two rights don't mend a wrong. Coin-tossing not allowed. (Par—15 correct.)

1. Twelve thousand years from now Earth's axis will point to Vega instead of Polaris.
2. A one-pound body may weigh either an ounce or a ton, depending on where it is.
3. The moon rises on the average 50.47 minutes later one day than it did the day before. High tide at a given place occurs, on the average, 50.47 minutes later than the corresponding high water of the day before. This precise agreement is one of the most amazing coincidences of science.
4. If the Earth should cease to rotate, the Mississippi River would begin to flow North.
5. An "earthquake" on the moon is impossible.
6. Absolute zero is the coldest temperature ever recorded at the South Pole.
7. Tuberculosis, typhoid fever, and diphtheria are three well-known diseases caused by bacteria.
8. Ganymede is the largest satellite in the solar system in comparison with its primary, Jupiter.
9. If you cut your arm and the blood comes out in spurts, an artery has been cut.
10. It is impossible to breathe and swallow at the same time.
11. The three fundamental units in physics and mathematics are length, mass, and time.
12. The average distance of the moon from the sun is the same as the average distance of the Earth from the sun.
13. If an eclipse occurred on January 1, 1937, at noon, at a certain place on Earth, another similar eclipse would occur on January 12, 1955, at eight o'clock in the evening, about eight hours further west in longitude.
14. An object halfway between the Earth and the moon would be attracted equally by the two bodies.
15. The evidence thus far obtained indicates that, among the factors which might operate to cause Ice Ages, variations of the amount of volcanic dust in the atmosphere has been more effective than any other astronomical factor.
16. Meteors would be much brighter if the Earth had no atmosphere to impede their motion.
17. Breathing is controlled by a nerve center in the brain.
18. Nitrous oxide is called "laughing gas" because occasionally, when inhaled in small quantities, it produces hilarity.
19. Heat will not of itself flow from a colder to a hotter body.
20. "Vibgyor" is the scientific name for the Red Spot of Jupiter.

TAKE A LETTER

Here are ten incomplete scientific facts. There are three or four suggestions with each statement, the purpose of which is to confuse you. If you do your science homework daily, you should be able to spot the one and only correct phrase in each question. Par for this course is seven.

1. A condition favoring rainfall is: (a) the ascent of a mixture of air and water vapor, (b) the cooling of a mixture of air and water vapor, (c) the expansion of a mixture of air and water vapor, (d) the infiltration of dust into a mass of air containing super-cooled water vapor.
2. The moon has no atmosphere because:

(a) it escaped into space, (b) it never had any, (c) it was used up by its original inhabitants, (d) there's no life on the moon, so it would be a total waste.

3. Which of the following creatures has the highest developed sense of smell? (a) bloodhound, (b) skunk, (c) ant, (d) robin.

4. The three elements which, in combined form, are most plentiful in the human body are: (a) oxygen, mercury, phosphorous, (b) oxygen, carbon, iron, (c) nitrogen, calcium, hydrogen, (d) oxygen, carbon, hydrogen.

5. The ideal body which would absorb all and reflect none of the radiation falling upon it would be called a: (a) white body, (b) black body, (c) perfect body, (d) infinite body.

6. The greatest number of total eclipses occurring in one year, counting both solar and lunar, is: (a) 1, (b) 4, (c) 7, (d) 11.

7. The distance of the moon from the Earth varies between the limits of 221,462 miles and 252,710 miles. The average dis-

tance is: (a) 237,081 miles, (b) 238,857 miles, (c) 269,693 miles.

8. Looked at in its broad implications, the discovery of the law of gravitation was important because it: (a) told us why an apple falls to the ground, (b) told us why the Earth and other planets move around the sun, (c) suggested that the whole of Nature was governed by hard and fast laws, (d) led to the "Scientific Revolution" of the 18th Century.

9. When two or more organisms live together in more or less intimate relationship the phenomena is called: (a) symbiosis, (b) pseudo-harmony, (c) extra-curricular activity.

10. John Smith's head has become enlarged, eyes thickened, nose enlarged, and his chin has become prominent, giving an apelike appearance to the face. He is suffering from: (a) acromeglia, (b) arthritis, (c) cretinism, (d) Graves' disease.

CHE-MYSTERY

This question was poured right out of some chemist's laboratory. The following 12 words, properly unraveled, spell out a wide variety of chemical terms, reactions, compounds, processes, properties, and what have you? Just so that you get the idea, we'll tell you that number six is as clear as crystal. Par for this hole? 8!

1. ciad, 2. killaa, 3. yemnez, 4. namamio, 5. lioldco, 6. starylc, 7. hengoal, 8. petosio; 9. sososim, 10. cleavne, 11. elielcomu, 12. styllaact.

MISSING LINKS

When certain words are given in a series they take on a definite meaning. For example, Earth, Mercury, Jupiter, Saturn, Uranus, Neptune and Pluto are merely planets when considered separately. Together they form the Solar System. Below are five such word combinations—with one of the words missing. Supply the missing link and identify the word combination. Par: Missing words, three; identification, four.

1. Prophase, Metaphase, _____, Telophase.

2. Vein, Artery, Pulse, Aorta, _____.

3. Pithecanthropus, Heidelberg Man, Neanderthal Man, _____, Cro-Magnon

Man.

4. Earthquake, Geyser, Deluge, Glacier, _____.

5. The sun, the planets, the asteroids, the comets, the meteoroids, _____.

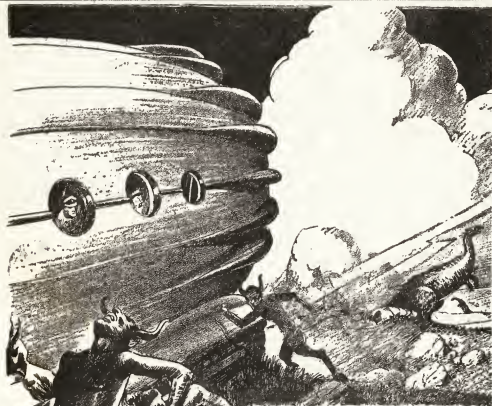
WHO'S WHO

Here are the names of 10 men who have contributed something to the world of science. In the parentheses of the right-hand column place the number of the scientist who is associated with that particular contribution. Par: Eight.

- (1) Henry Cavendish
- (2) William Crookes
- (3) Edward Jenner
- (4) James Joule
- (5) Johann Kepler
- (6) Jean Lamarck
- (7) Irving Langmuir
- (8) Johann Mendel
- (9) Mendeléeff
- (10) Robert A. Millikan

- () cosmic rays
- () first law of thermodynamics
- () cathode rays
- () theory of evolution
- () composition of water
- () periodic law of elements
- () vaccination
- () statical atom
- () laws of planetary motion
- () heredity

Modern Game-Hunters Stalk the Wild



Like an avenging meteor the black craft tore

The LOOT

CHAPTER I

The Time Tractor

A
Complete
Novelet
of
the Stone
Age

HUGH CAMERON rose from his knees and dusted his hands. He looked at Jack Cabot and Conrad Yancey and the two of them stared back at him, questioningly.

"We're ready to go," Cameron announced. "I've checked everything."

"You give me the willies," Yancey spoke flatly. "Checking and rechecking."

"Got to make sure," Cameron told him. "Can't take any chances, not

Time Travelers from the Future and the

Denizens of a Remote Prehistoric Era!



downward

OF TIME

on a trip like this."

Cabot shoved up his hat and scratched his head.

"Are you sure that the theory and the mechanism are all right, Hugh?" he asked anxiously. "I still have a feeling we're all crazy."

Cameron nodded.

"Near as I can make out, Jack, it will work. I've gone over it step by step. Pascal has something here that's unique. A theory that has no precedent. Treating time as something abstract, but using that very basis for time-travel."

"It would take a guy who got kicked out of Oxford for saying Einstein's

By
**CLIFFORD
D.
SIMAK**

Author of "Rule 18," etc.

Present Project Themselves into the Past

relativity theory was all haywire to make something like this," observed Yancey.

Cameron pointed at a crystal globe atop a mass of intricate machinery.

"The whole answer is in that time-brain," he said. "That's the one thing I can't figure out. How he made it I don't know. But it works. I have proof of that. The rest all checks out.

"Pascal has taken the position that time is purely subjective. That it has no existence in fact. That it is only a mental concept, but something that is entirely necessary for orientation."

"That's the part I can't get my teeth into," protested Cabot. "It seems to me that if a man were going to travel in time there'd have to be existent time to travel in. Time would have to be an actual factor. Otherwise it would not obey mechanical rules. There'd be no theater for mechanical operation. In other words, just how in hell are we going to travel through something that doesn't exist?"

Cameron lit a cigarette and tried to explain.

"Your mind sticks on the mechanical part," he said. "Pascal's theory isn't all mechanics or all mathematics, although there's plenty of both. There're a lot of psychological concepts and that's one place where they come in. He figures that even if time is non-existent, even if it has no factual identity, that the human brain has a well-developed time-sense. Time seems entirely natural to us. Viewed from the commonplace point of view, there is absolutely no mystery about it. It is firmly embedded in the human consciousness.

"Pascal figured that if you constructed a mechanical brain you could construct it in such a manner that its time-sense would be enormously magnified. Maybe ten thousand times that of a human mind. Maybe more. There's no way to tell. So Pascal not only constructed the mechanical counterpart of a human brain, but he constructed it with an exaggerated time-sense. That brain over there knows more about time right now than the human race will ever know. Nobody

else on Earth could have done it. No twentieth-century man. Pascal's a wizard. That's what he is."

"Listen, Hugh," said Cabot, "I want to be sure. I sent over to America, had you come out to London because I knew that if any man could tell me anything about this pipe-dream it would be you. I want you to feel absolutely certain. I can't understand it myself. I figure you can. If you have any doubt, say so now. I don't want to get stuck halfway back in time."

CAMERON puffed away at his smoke.

"It isn't a pipe-dream, Jack. It's the goods. The time-sense in the brain is developed to a point where it has an ability to assume mastery over time. It can move through time. What's more, it can move the time-tractor through time—with all of us inside the tractor. Not hypnotism, because in hypnotism you only think you're some place or doing something that isn't so.

"The brain actually can move back and forth in time and it can move us back and forth in time. It develops some sort of a force. Not electricity. Pascal thought it was that at first. But it isn't, although it's related to electricity. For want of a better term we might call it a time-force. That describes it well enough. It develops this force in sufficient amount to operate the control mechanism that guides the brain's movement through time."

He flipped his hands helplessly.

"That's all I can tell you. The rest of it is mathematics that would be pure Greek to you and mechanics that you'd have to take eight years of college to understand."

He looked at Cabot.

"You have to take my word for it, Jack, that the damn thing will run."

Cabot smiled.

"That's good enough for me, Hugh," he said.

A shadow blotted out the sunlight on the floor. The three looked toward the door.

Dr. Thomas Pascal stood there, a

white-haired man with a face that was almost childish in its simplicity. He was one of 1940's scientific wizards.

"All ready to start?" he asked cheerfully.

Cameron nodded.

"Everything seems all right, Doctor," he said. "I've checked every cable, every cog, every contact. They're all in perfect order."

"All right, then," growled Yancey. "What are we waiting for. I'm all set to slaughter me a saber-tooth."

"You'll find plenty of them," Pascal told him. "I told you I'd take you to a virgin game field. A place where a rifle shot had never been fired. That's what I'm going to do."

Cameron laughed.

"Doctor," he asked, "how did you ever get the idea of selling these two mad hunters on this proposition? A hunting trip back into time. That's one for the records."

"I needed money to finish the tractor," Pascal told him, "so I cast around for someone who might be interested, but interested in such a way that my invention would not be used for base ends. Then I heard of Mr. Cabot and Mr. Yancey. Plenty of money. Famous hunters. What could be more appealing to them than a hunting trip back into the past? But they weren't easy to convince. They listened only when I consented to let you check the entire machine."

Cabot shook his head stubbornly.

"Doctor, you still have to show me those game fields back in the Riss-Wurm interglacial period. It's fifty-thousand years or more back there. A long ways to go."

"You'll eat mammoth steak for dinner tonight," Pascal told him.

"If you're going to make good on that promise," Cameron suggested, "we had better get started. All our supplies are stored, the machinery is checked. We're ready."

"All right," agreed Pascal. "Will someone shut the door and make sure the ports are closed?"

YANCEY walked to the doorway, reached out to pull the door shut and lock it. For a moment he stood

still, staring out over the green hills. There, only a few miles away, lay the village of Aylesford. And beyond lay the valley of the Thames. A country steeped in legend and history. In a few minutes they would be moving back, through and beyond the days which had given rise to that legend and history. Two American hunters on the maddest hunting trip the world had ever known.

Yancey closed the door, chuckling.

"Wonder how much lead it takes to stop a saber-tooth?" he mused.

Turning back to the interior of the great tractor, he saw that the time-brain was glowing greenly. Dr. Pascal, standing before it, seemed like a tiny, misshapen gnome, working before a fiery furnace.

"Door closed and locked," Yancey reported.

"Ports all tight," said Cabot.

"Okay," replied Pascal.

Machinery hummed faintly, nothing more than a whisper of a sound.

There was nothing to indicate they had left the present, were moving backward through time, but when Yancey looked through a port, he choked back an exclamation.

There was nothing outside the port. Just a blank, flat, gray plane of nothingness, with now and then shadows that flitted and were gone.

Pascal sucked in his breath as the tractor rocked and bumped. The gray outside the port became less dense. Objects became faintly discernible.

"We're going too fast," Pascal explained. "Ground seems to be rising. Have to take it slower. We might hit something. Most things wouldn't stop us, but there's no use taking chances."

"Sure the ground is rising," Cameron told him. "Maybe by this time there isn't any English channel. Back in the Riss-Wurm period the British Isles were connected with the continent. The Thames flowed north through the North Sea basin to reach the North Sea."

The gray outside the ports thinned even more. The tractor rocked like a boat in a gentle swell. Then the

grayness turned to white, a dazzling white that blinded Yancey. The tractor moved sharply upward, seemed to be riding a huge wave, then dropped, but more slowly.

"We just passed the Wurm glacier," Pascal told them. "We're in the Riss-Wurm now."

"Take it just a little easier," Cameron warned him. "That last bump busted a tube in the field radio. We can fix that, but we may need that radio. We don't want to smash it entirely."

Outside the port now Yancey could make out objects. A tree became clearer, was sharply defined and beyond it Yancey saw solid landscape, bathed in a rising sun.

He heard Pascal's voice.

"Seventy thousand years, approximately," he said. "We should be where we intended to go."

But Yancey was intent on the scene outside. The tractor stood on the top of a high knoll. Below unfolded a panorama of wild beauty. Rolling hills fell away to a wide valley, green with lush grass, while in the distance a stream caught the sunlight of early dawn and glinted like a ribbon of silver. And on the hills and in the valley below were black dots, feeding game herds, some so close he could make out individual animals. Others were black spots.

Yancey whistled soundlessly.

He wheeled from the port.

"Jack," he began breathlessly, "there are thousands of herds out there—"

But Cabot, he saw, had already unlocked the door.

THE four of them stood grouped in the doorway and stared out. Pascal smiled.

"You see," he reminded them, "that I told you the truth."

Cabot drew in his breath sharply.

"You sure did," he admitted. "I doubt if Africa in its prime was better than this."

"An overlapping of fauna," said Pascal. "The old Stone Age merging with the modern. One type dying out, another coming in. The most diversi-

fied and plentiful game herds that ever existed on the face of the earth before or since. The cave bear, the saber-tooth, the cave hyena, the mammoth and woolly rhinoceros living coincidentally with vast herds of wild ox, reindeer, Irish elk and other animals of more recent times."

"Some hunting!" said Yancey.

Cabot nodded in agreement. He stepped down from the door onto the ground.

"Let's stretch our legs," he suggested.

"Can't right now," said Cameron. "Have to check the machinery over. I want to be sure everything's all right."

Yancey jumped to the ground.

"You fellows had better take your rifles," warned Cameron.

Cabot laughed.

"We have our revolvers," he said.

"We aren't going far away."

The two hunters walked slowly, wonderingly, away from the tractor. The ground beneath their feet was soft to the tread with thick grass. Head-high thickets spotted the hill-sides that sloped away toward the river. On some of the hills reared great, grotesque rock formations. And everywhere was game.

Yancey halted and lifted a pair of binoculars to his eyes. For several minutes he stood, studying the landscape. Then he lowered the glasses and slipped the thong from his neck. He handed them to Cabot.

"Take a look, Jack," he invited.

"You won't believe it until you see it with your own eyes. There's a herd of mammoth down by the river. That dark spot just this side of the big grove. And there's another big bunch up the river a bit. I picked up a few woolly rhinos. And bison, something like the old American buffalo."

"*Bos priscus*," said Cabot. "I read up some on Stone Age animals the last few weeks. Primitive form of bison. Maybe we'll be able to get a few *Bos latifrons*. Big brutes with a horn spread of ten feet. But maybe they're extinct. They're the grandpappies of those fellows out there."

"What's that big bunch across the

river?" Yancey asked.

Cabot trained the glasses in the direction of Yancey's pointing finger.

"Irish elk," he pronounced.

A coughing roar brought the two men halfway around. What they saw held them petrified for a moment.

Less than a hundred feet away, at the edge of a thicket, through which he must have come without a sound, stood a massive bear. A huge beast, six feet at the shoulders. He was dark brown in color and he was angry. He rocked gently from side to side and champed his jaws. From his chest rumbled a growl that seemed to shake the earth.

"For God's sake," hissed Cabot, "don't move fast! Edge over toward the tractor easy. That boy is ready to charge!"

Yancey's hand dropped to his gun butt. Out of the tail of his eye Cabot caught the motion.

"Yancey, you damn fool," he whispered huskily, "keep your hand away from that. A forty-five slug wouldn't more than tickle him."

SLOWLY the two men backed away from the bear, back toward the towering gray form of the time-tractor, their eyes never leaving the monstrous beast that stood swaying before them. The bear was working himself into a rage. His chest rumbling was almost continuous now, like a train crossing a long trestle. He snarled and the snarl was a sound of raw fury that sent cold shivers up Cabot's spine.

Tensely they paced their slow backward march. Yancey's heel caught in a root and he stumbled, but righted himself quickly. The bear growled thunderously and shook his head. Foam from his drooling jaws flecked the massive brown shoulders.

Then the bear charged. With no apparent preliminary move he launched into full motion, with the speed of an avalanche.

"Run," shrieked Cabot, but his cry was drowned out by a blasting report. The charging bear lurched forward, struck head and shoulders on the ground and somersaulted.

Cabot, racing toward the time-tractor, saw Cameron and Pascal framed in the doorway, heavy elephant guns at their shoulders.

"Wait," roared Cabot. "Make that second shot count!"

In three leaps he was beside the tractor door.

Pascal shoved the gun at him.

"Never shot one before in my life," he told Cabot.

Cabot spun about, gun in hand.

The bear was on its feet, swaying heavily from side to side. Its small pig eyes gleamed balefully and red foam flecked its jaws and shoulders.

Deliberately Cabot brought the gun-barrel up, centered the sights squarely between the two eyes and squeezed the trigger. The bear coughed gently and rolled over.

Yancey wiped his brow with the back of his hand.

"Closest shave I've ever had," he confessed.

"Cave bear," said Pascal. "Just one of the big life-forms you will find here."

Cameron stepped down from the tractor.

"You'll find out these animals aren't the gun-shy brutes you two have been hunting," he stated. "These babies don't fear man. They figure man isn't dangerous, if in fact they've ever seen a man. The Neanderthals that are living somewhere in this country right now are no match for a brute like that."

Yancey wiped his brow again.

"This is the damnest place I ever saw," he declared. "Jack and me just step out for a smoke and a look-around. We aren't gone five minutes and a bear jumps us."

Cameron guffawed.

"Picked you out for breakfast," he said.

Yancey grimaced, but made no reply.

Suddenly Cabot hunched forward, finger pointing to a patch of tall grass beyond the dead bear.

"There's something in there!" he whispered harshly.

A tawny shape raced from the grass, landed on top of the bear's

brown body. With glinting claws and powerful teeth it laid back the hide on the great shoulder. Then, seeing the men, it backed away, its face twisted into a blood stained snarl.

Yancey's .45 leaped out of its holster and exploded almost as it cleared. One explosion blending with another, the gun set up a roll of thunder that beat against the ears of the four men.

Still snarling, the tawny beast jerked to the impact of the heavy slugs. Then it sprawled and tumbled as Yancey's gun clicked on an empty cartridge.

But it was not dead. Snarling and spitting, it regained its feet, slunk low in a deadly slouch, razor-sharp, foot-long fangs bared in a murderous sneer.

Cabot whipped out his revolver as Yancey rapidly clicked new cartridges into the cylinder. Cameron snapped the elephant gun to his shoulder. The rifle bellowed and the cat rolled over. Cabot slid his gun back into the holster.

"Saber-tooth," said Pascal coolly.

"He sure carries lead," Yancey commented, breathing hard.

Cameron cradled the rifle in his arm and stared at the two animals.

"Hunting," he said. "Hell, this isn't hunting. This is an eternal Custer's last stand—a continuous battle in self-defense."

"Those critters sure are blood-thirsty," agreed Yancey.

"And," he added, "not afraid of us."

Cameron blew smoke through the gun barrel.

"Wonder how cave bear steaks taste," he mused.

Yancey looked the huge animal over.

"Probably tougher than hell," he said appraisingly.

York lay stretched below, a fairy city. Under the soft glow of millions of lights it took on an unearthly beauty. It was a city of slender pinnacles of pure white beauty, looping arches of rainbow hues, formal gardens and parks, gleaming towers of argent, black domes.

Steve Clark liked the view. He often came here at night to sit and talk with his friend, Andy Smith, one of the ace pilots of the Time Travel service.

Smith was reading the last edition of the *Daily Rocket*. Steve Clark had brought it in only a moment before, fresh from the press, and thrown it on the desk. Smith had it spread in the white circle thrown by the lone light. The rest of the office was in darkness. Beyond the desk lockers, other desks and record files loomed darkly. The time-machines themselves were in an adjoining room, ready for launching from the face of the building.

"How's business?" asked Clark, with his feet fixed firmly on top of the desk.

Andy Smith grunted.

"Not so good. It's the fifty-sixth century, time-travel isn't a novelty any more and our rates are too high. Didn't have more than a dozen or two trips all week." He jabbed his finger at the purple headlines. "Times seem to be all right for you newspaper fellows," he said. "Lots of big news this afternoon."

"Yeah," Steve Clark agreed. "The Centaurians again. They're always good for a banner-line any day. Made a real haul this time."

"I should say so," Smith said. "Martian bongo stones, eh? Fourteen of them. Largest and most perfect collection in the entire Solar System."

"That's it," said Clark. "The old man almost busted a blood vessel when that story came in an hour ago. Wanted to scoop the city."

Clark chuckled.

"We did," he said.

Andy Smith folded the paper carefully.

"Steve," he said, "what are the Centaurians? Nobody seems to know."

CHAPTER II

The Centaurians

FROM the office of Time Travel, Inc., on the 600th story of the Berkley stratosphere building, New

"They're super-crooks for one thing," Clark said, "and when you've said that, you've said about all that anyone knows about them for sure. They've laughed at the best brains in the police business for the last five hundred years. And I figure they'll still be laughing five hundred years from now if they live that long and there's no reason to think they won't. Unless they're keeping it a secret, the flatfeet don't even know where their hideout is located. They've made monkeys out of everyone. Hell, didn't they steal a gold shipment out from under the nose of the Interplanetary Police, and keep it, too, in spite of the fact that every damn IP man in the System was turned loose on the case?"

"You figure, then," asked Smith, "that the Centaurians are real? That they are something that isn't human. A super-gang of unearthly bandits?"

"You know," Clark replied, "a newspaperman doesn't take to fables very easy. He breaks more myths than any other kind of critter I know. But, as a newspaper man, I'm telling you that these Centaurians aren't human. Probably a lot of jobs have been blamed on them that they never had a thing to do with. But there are cases on record of eye-witnesses who saw them. Only two or three such instances in the last five hundred years, but they check up well.

"All agree on vital points. They got tails and they're covered with scales and instead of feet they have hoofs. Whatever they are, they don't go in for penny-ante stuff. When they make a haul, it's one that's worthwhile. Those bongo stones. They were worth ten billion if they were worth a dime. And the shipload of IP gold."

SMITH whistled.

"Then you figure they came from Alpha Centauri?" he asked.

"Either Alpha Centauri or some other place outside the System. Nothing like them been found on any of the planets here. I always sort of figured they were fugitives from their own System. Maybe things got too hot for them, wherever they were, and they had to take it on the lam. What-

ever they are or wherever they come from they sure have easy pickings here. They walk off with just about whatever they want to and nobody's even come close to catching up with them.

"I read some place, long time ago, that it is believed they came to Earth in some sort of a crazy space ship. Wrecked when it struck. The ship was smashed up and two or three of its occupants were killed—but I guess they never did find out much about them from that. The ship was all in pieces and the things in it were crushed to pulp. Maybe it was something or somebody else, not the Centaurians at all."

Steve Clark lighted a Venus-weed cigar and puffed.

"Whatever they are," he said, "they make damn good news copy."

Smith glanced at his watch.

"I'll be off in a few minutes," he said. "What say we hop over to Paris and buy us a round of drinks?"

"Sounds all right," agreed Clark.

Smith rose from his chair, stuffing the paper into his pocket. And standing there, beside the desk, he froze in astonishment.

The office door was open and inside it stood a group of black-shrouded figures that seemed to blend with the darkness. Something gleamed in the light reflected from the polished table-top.

A voice spoke out of the darkness, a voice that spoke the English tongue with slurred accent.

"You will please resume your seat," it suggested.

Smith sat down again and Clark, dropping his feet from the desk, jerked his chair around.

"You also, sir," said the voice.

Clark obeyed. There was some metallic menace in those short, clipped, incredibly accented words which held a definite note of threat.

Slowly, majestically, one of the black-shrouded figures strode forward, leaving his companions by the door. He stopped before the desk, still in the darkness, but better defined now in the reflections from the desk-top. The man wore dark glasses and he was

shrouded in a dark cape, the edge of which trailed to the floor, covering his feet. A black cowl, a part of the cape, covered his head and draped over his face, hiding most of his features.

Steve Clark felt the hair crawl at the back of his neck as he studied the visitor.

Smith made his voice pleasant.

"Anything I can do for you?" he asked.

"Yes, there is," said the strange, black-draped figure and in the faint light Smith saw the quick, smooth flash of white teeth in the shadowed face. He couldn't make out the face. Couldn't see anything, in fact, except the flash of teeth when he spoke and the occasional dull shine of reflected light from the man's eyes.

The teeth flashed again.

"I want a time-condensor," he said.

Andy Smith managed to choke back a gasp of astonishment, but his face was blank when he answered.

"We don't sell parts," he said.

"No," said the black-robed one, and the single word sounded more like a challenge than a question.

THERE is no call for them," Smith explained. "Time Travel has the only time-machines in existence. They operate under strict governmental supervision. No one else owns a time-machine. Naturally, the only ones who would have use for spare parts would be our own company."

"But you have an extra condensor?"

"Several of them," Smith admitted.

"We have need of replacements frequently. It's dangerous to go into time with a faulty condensor."

"I know that," the other replied.

"Contrary to what you may believe, there is at least one time machine in existence other than the ones you own. I have one."

Something like a chuckle sounded from his lips.

"Strangely enough I obtained it from your company. Many years ago. I came here to get a condensor," said the man. The ugly muzzle of some sort of a weapon poked from the folds of his cape. "I can take it

by force if need be. I would prefer not to. On the other hand, if you would cooperate, I would be willing to pay."

He leaned closer to the desk. A hand flashed out of the cape, was visible for only an instant and then disappeared inside the cape again. But the hand had tossed several small round objects on the desk-top, objects that seemed to spin in a blaze of color under the lamp-light.

"Bongo stones," said the white teeth. "Not the ones stolen this afternoon. No way to identify them. But bongo stones. Worth a fortune."

Steve Clark stared at the stones, his mind spinning.

Bongo stones! He counted them. Ten of them! In a flash he knew who this visitor was, knew that the myth of the Centaurians was true. For he had glimpsed that hand during the swift instant it had tossed the stones on the desk-top. A scaly hand, like the paw of a reptile. And the clicking of the thing's feet when it walked was like the sound of cloven hoofs.

Through his buzzing mind came the voice.

"And now suppose I take a condensor under my arm and walk out. Leaving the stones behind."

Smith hesitated.

The muzzle of the weapon gestured imperiously, impatiently.

"Otherwise," said the cold voice, "I shall kill you and take the condensor in any event."

Smith rose and walked mechanically to a locker. Steve Clark heard the rasp of a key as his friend opened the door to take out a condensor.

But he still stared at the bongo stones.

Now he knew why the police had never found the Centaurians' hiding place. They had no hiding place! They were bandits in time! The whole scope of space and time for their operations! They could sack the Queen of Sheba's mines one day and the next day move on to snatch treasures out of the remote future, treasures yet undreamed of!

"Clever," he said. "Damn clever."

Andy Smith was standing beside

him, looking at the stones. They were alone in the room.

"You gave them the condensor?" Clark asked.

Smith nodded, dry-lipped.

"There wasn't anything else I could do, Steve."

Clark motioned toward the stones.

"What about these, Andy?"

"I was thinking," Smith said. "We couldn't sell them here—or anywhere else. They'd ask us how we got them. They'd lock us up. Probably before they got through with it, they'd prove we stole them and send us to the Moon-mines."

"There's a way," Clark suggested. He nodded toward the hangar where the time-machines were ranged.

Smith wet his lips.

"I thought of that," he said. "After all, those fellows stole a time-machine from the company once. Probably the company never reported the loss. Afraid of what the government might do."

Silence hung like a breathing menace over the room.

"Those were the Centaurs, weren't they?" Andy Smith asked.

Clark nodded. Then waited.

"The company will throw me out for this," said Smith bitterly. "After ten years of working with them."

Pounding feet sounded in the corridor outside.

Clark's hand shot out and scooped up the stones.

"Can't let anyone find us with these on us," he whispered huskily. "Let's duck into the hangar."

Swiftly the two leaped through the doorway into the darkened room. Crouched under the wing of one of the time-fliers they saw figures come into the room they had just quitted. Figures in police uniforms.

The police stood stock-still in the center of the room, staring.

"What's going on here?" shouted one of them.

Silence fell more heavily.

"What do you think that fellow meant, telling us he saw some funny looking birds coming out of here?" one of them asked the other two.

"Let's look in the hangar," one of

the policemen said. He leveled a flash and a spear of light cut the deep gloom, just missing the two men crouched under the wing of the time-flier.

Clark felt Smith tugging at him.

"We got to get out of here," Smith hissed in his ear.

Clark nodded in the darkness. And he knew there was only one way to get out of there.

Together they tumbled through the door of the time-flier.

"Here we go," said Smith. "We're criminals now, Steve."

The machine lurched out through the suddenly opened lock.

The time mechanism hummed and two men, one with ten bongo stones in his pocket, fled through time.

CHAPTER III

Anachronic Treasure

OLD One-Eye was fighting his last battle. His great stone-ax lay out of reach, its handle broken, swept from his hand by a blow aimed at him by the mighty cat. His body was mauled and across one shoulder was a deep wound from which a stream of crimson trickled down his hairy chest.

To flee was useless. One-Eye knew that he could not out-distance Saber-Tooth. There was only one thing to do—stand and fight. So with shoulders hunched, with his hands poised and ready for action, with his one eye gleaming balefully, the Neanderthal man faced the cat.

The animal snarled and spat, its tail twitching, crouched for a leap. Its long, curved fangs slashed angrily at the air.

One-Eye had no delusions about what was going to happen. He had killed many saber-tooths in his life. In company with others of his kind, he had faced the charge of the great cave-bear. He had trailed and brought down the mighty mammoth. In his day One-Eye had been a great hunter, an invincible warrior. But now he had reached the end of life. A man's

two hands were no weapon against the tooth and claw of a saber-toothed tiger. One-Eye knew he was going to be killed.

Dry brush crackled back of the cat and the saber-tooth pivoted swiftly at this threat of new danger from the rear. One-Eye straightened and froze in his tracks.

Conrad Yancey, standing at the edge of the brush, slowly raised his rifle.

"I reckon this has gone about far enough," he said. "A man's got to stick by his own kind."

Startled, the great cat's snarls rose into a siren of hate and fear.

Yancey lined the sights on the ugly head and squeezed the trigger. The saber-tooth leaped into the air, screaming in rage and terror. Again the rifle blazed and the cat straightened, reared on its hind legs, fell backward to the ground, coughing great streams of blood.

Across the body of the beast One-Eye and Yancey exchanged glances.

"You put up a swell battle," Yancey told the Neanderthaler. "I watched you for quite a spell. Glad I was around to help."

Petrified by terror, One-Eye stood stock-still, staring. His nostrils twitched as he sniffed the strange smells which had come with the stranger and his shining spear. The spear, when it spoke in a voice of thunder, had a smell all its own, a smell that stung One-Eye's sensitive nostrils and his throat and made him want to cough.

Yancey took a slow, tentative step toward the Neanderthaler. But when the sub-man stirred as if to flee, he stopped short and stood almost breathless.

Yancey saw that the Neanderthaler's left eye at some time had been scooped out of his head by the vicious blow of a cruelly taloned paw. Deep scratches and a tortuous malformation of the region above the cheek-bone told a story of some terrible battle of the wilderness.

Short of stature and slightly stooping of posture, the Neanderthaler was a model of awkward power. His head was thrust forward at an angle be-

tween his shoulders. His neck was thick as a tree boll. The long arms hung almost to the knees of the bowed legs and the body was completely covered with hair. The heavy bristle of hair on his enormously projecting eyebrows was snowy white and throughout the heavy coat of hair which covered the man were other streaks and sprinklings of gray and white.

"An old buck," said Yancey, half to himself. "Slowing down. Someday he won't move quite fast enough and a cat will have him."

CONRAD YANCEY took another slow step forward and this time the Neanderthaler, bristling with terror, wheeled about with a strange, strangled cry of fear and ran, shuffling awkwardly, down the hill to plunge straight into a dense thicket.

Back at the time-tractor camp Yancey told the story of the battle between the caveman and the cat, of how he watched and had finally stepped in to save the man's life.

But the others had stories, too. Cabot and Cameron, hunting together a few miles to the east, had been charged by an angry mammoth bull, had stopped him only after they had placed four well aimed heavy-caliber bullets into him. Pascal, remaining at the tractor, had scared off a cave bear and reported that a pack of five vicious, slinking wolves had patrolled the camp throughout the afternoon. He had shot two of them and then the rest had scattered.

For here was a land that was teeming with game; a land where the law of claw and fang ruled and was the only law; where big animals preyed on smaller animals and in turn were preyed upon by still bigger ones. Here was a land without human habitation, with the few Neanderthalers who did live here hiding in dark, dank caves. Here was a land that had no human tenets, no softening hand of civilization.

But here, in this primeval wilderness of what later was to become the British Isles, was the greatest hunting ground Cabot and Yancey had ever seen. They shot in self-defense as

often as they shot to bring down marked game. They found that a cave bear would carry more lead than a elephant, that the saber-tooth was not so hard to kill as might be thought, that only superb marksmanship and the heaviest bullets would bring the mammoth to his knees.

The flickering campfire, lighting up the gray, shadowy bulk of the time-tractor, was the only evidence of civilized life upon the darkening world as a blood-red moon climbed over the eastern horizon and lighted a land that growled and snarled, shivered and whimpered, hunted and was hunted.

YANCEY saw Old One-Eye lurking on the edge of the camp when he arose in the morning. He had just a glimpse of the old fellow, squatting in a clump of bushes, looking over the camp with his one good eye. He disappeared so quickly, so soundlessly that Yancey blinked and rubbed his eyes, hardly believing he had left.

In the field that day Yancey and Cabot caught sight of him several times, lurking in their wake, spying upon them.

"Maybe," Cabot suggested, "he is trying to get up enough courage to thank you for saving his life."

Yancey grunted.

"Hell, I had to do that, Jack," he said. "He isn't more than an animal, but he's still a man. We got to play along with our own kind in a place like this. He was such a brave old cuss. Standing there, ready to go to bat with that cat with his bare hands."

Back at the camp, Pascal looked at it in a scientific light.

"Just natural curiosity," he said. "The first glimmering of intelligence. Trying to figure things out. With what limited brain power he has that old fellow is doing some heavy thinking right now."

"Maybe he recognizes you as one of his descendants. Great-grandson to the hundredth generation, maybe," Cameron jibed at Yancey.

"The Neanderthal race is not the ancestor of man," Pascal protested. "They died out or were killed off by

the Cro-Magnons, who'll be moving in within another ten or twenty thousand years. The Neanderthaloids were just a sort of blind alley. An experiment that didn't go quite right."

"Seems damn human, though," protested Yancey.

One-Eye became a camp fixture. He lurked around the tractor, trailed Yancey when he went afieid. Degree by degree he became bolder. Meat was left where he could find it and he carried it off into the brush. Later he didn't bother to drag it off. In plain view of the hunters he squatted on his haunches, ripping and rending it, snarling softly, gulping great, bloody mouthfuls of raw flesh.

He haunted the campfire like a dog, apparently pleased with the easy living he had found. He came farther away from the encircling brush, squatted and jabbered just outside the circle of firelight, waiting for the bits of food tossed to him.

At last, seemingly convinced he had nothing to fear from these strange creatures, he joined the campfire circle, sat with the men, blinking at the campfire, jabbering away excitedly.

"Maybe he has a language," said Pascal, "but if he has it's very primitive. Not more than a dozen words at most."

He liked to have his back scratched, grunting like a contended hog. He begged for cubes of sugar.

"Makes a nice pet," Cameron declared.

But Yancey shook his head.

"Something more than a pet, Hugh," he said.

For between Yancey and the old Neanderthaler something akin to comradeship had developed. It was by Yancey that the old one-eyed savage sat when he came into the ring of firelight. It was at Yancey that he directed his chatter. During the day he haunted Yancey's footsteps like a shadow, at times coming out openly to join him, ambling along with his awkward gait.

One night Yancey gave him a knife, half wondering if One-Eye would know what it was. But One-Eye recognized in this wondrous piece of

polished metal something akin to the fist ax that he and his people used to flay the pelts from the animals they killed.

Turning the knife over and over, One-Eye slobbered in delirious glee. He jabbered excitedly at Yancey, clawed at the man's shoulder with caressing paw. Then he leaped from his place by the camp-fire and slithered away into the darkness. Not so much as a breaking twig heralded his plunge into the night.

Yancey rubbed his eyes.

"I wonder what the damn old fool is up to now?" he asked.

"Went off to try his new knife," suggested Cabot. "Something like that calls for a little throat-slitting."

Yancey listened to the moaning of a saber-tooth in the brush only a short distance away, heard the bellow of a mammoth down by the river.

He shook his head dolefully.

"I sure hope he watches his step," he said. "He's slowing up. Getting old. That saber-tooth out there might get him."

But in fifteen minutes One-Eye was back again. He waddled into the circle of firelight so silently that the men did not hear his approach.

Looking over his shoulder, Yancey saw him standing back of him. One-Eye was holding out a clenched fist, but within the fist was something that glinted in the flare of the campfire.

Pascal caught his breath.

"He's brought you something," he told Yancey. "Something in exchange for the knife. I would never have believed it. The barter principle."

Yancey rose and held out his hand. One-Eye dropped the shiny thing into it. Living flame lanced from it, striking Yancey's eyeballs.

It was a stone. Yancey rotated it slowly with his fingers and saw that within its center dwelt a heart of icy blue flame, while from its many facets swarmed arcing colors of breath-taking beauty.

Cabot was at his elbow, staring.

"What is it, Yancey?" he gasped.

Yancey almost sobbed.

"It's a diamond," he said. "A diamond as big as my fist!"

"But it's cut," protested Cabot. "That's not a stone out of the rough. A master jeweler cut that stone!"

Yancey nodded.

"Just what would a cut diamond be doing in the old Stone Age?" he asked.

CHAPTER IV

The Broadcast in Time

ONE-EYE pointed down into the throat of a cave and jabbered violently at Yancey. The hunter patted the hoary shoulders and One-Eye danced with glee.

"This must be it," Yancey said.

"I hope so," said Cameron. "It's taken plenty of time to make him understand what we wanted. I still can't understand how we did it."

Cabot wagged his head.

"I can't understand any of it," he confessed. "A Neanderthaler lugging around cut diamonds. Diamonds as big as a man's fist."

"Well, let's go down and see for ourselves," suggested Yancey.

One-Eye led the way down the steep, slippery mouth of the cave and into a dimly lit cavern, filled with a sort of half-light that filtered in from the mouth of the cave on the ground above.

Cabot switched on a flashlight and cried out excitedly.

In cascading piles upon the floor of the cavern, stacked high against its rocky sides, were piles of jewels that flashed and glittered, scintillating in the beams of the torch.

"This is it!" yelled Cameron.

Pascal, down on his knees in front of a pile of jewels, dipped his hands into them, lifted a fistful and let them trickle back. They filled the cavern with little murmurings as they fell.

Cabot swept the cave with the light. They saw piles of jewels; neat stacks of gold ingots, apparently freshly smelted; bars of silver-white iridium; of argent platinum; chests of hammered bronze and copper; buckskin bags spilling native golden nuggets.

Yancey reached out a hand and leaned weakly against the wall.

"My God," he stammered. "The price of empires!"

"But," said Pascal, slowly, calmly, although his face, as Cabot's torch suddenly lighted it, was twisted in an agony of disbelief, "how did this all come here? This is a primitive world. The art of the goldsmith and the jewel-cutter is unknown here."

Cameron's voice cut coolly out of the darkness.

"There must be an explanation. Some reason. Some previous civilization. A treasure cache of that civilization."

"No," Pascal told him, "not that. Look at those gold bars. New. Freshly smelted. No sign of age. And platinum—that's a comparatively recent discovery. Iridium even more recent."

Cabot's voice held an edge of steel command.

"We can argue about how it got here after we have it stowed away," he said. "Pascal, you and Hugh go down and bring up the tractor. Yancey and I will start carrying this stuff up to the surface right away."

YANCEY toiled up the throat of the cave. Reaching the surface he slid the sack of jewels from his shoulder and wiped his brow.

"Tough work," he told Cameron.

Cameron nodded.

"But it's almost over now," he comforted. "Just a few more hours and we'll have the last of the stuff in the tractor. Then we get out of here."

Yancey nodded.

"I don't feel too safe," he admitted. "Somebody hid all this junk in the cave. How they did it, I don't have the faintest idea. But I have a queer feeling it wouldn't go easy with us if they caught us."

Pascal staggered out of the cave and slid a gold bar from his shoulder.

He mopped his brow with a shirt sleeve.

"I'm going down to the tractor and get a drink of water before I pack that a foot farther," he announced.

Yancey stooped to pick up his gunny sack. Pascal's scream echoed.

The hillside below the tractor before had been empty of everything except a few scattered boulders and trees. Now a machine rested there, a grotesque machine of black metal, streamlined, with stubby wings, suggestive of a plane. As Yancey caught his first sight of it, it was indistinct, blurred, as if he saw it through a shimmering haze. Then it became clear, sharp-cut.

Like a slap in the face came the knowledge that here was the answer to those vague fears he had felt. Here must be the owners of the treasure cache.

His hand slapped down to his thigh and his gun whispered out of its holster.

A door in the strange machine snapped open and out of it stepped a man—but hardly a man. The creature sported a long tail, and it was covered with scales. Twin horns, three inches or so in height, sprouted from its forehead.

The newcomer carried something that looked like a gun in his hand, but no gun such as Yancey had ever seen. He saw the weapon tilt up toward him and his .45 exploded in his fist. Even as flame blossomed from his gun, he saw a .45 come up in Cameron's hand, in the second after the blast of his own gun, then heard the deadly click of a cocking hammer.

The first of the scaly men was down. But others were tumbling out of the strange mechanism.

Cameron's gun barked and once again Yancey felt the comforting kick of the .45 against the heel of his palm, hardly knowing he had squeezed the trigger.

From one of the guns carried by the scaly men whipped out a pencil of purple flame. Yancey felt its hot breath clip past his cheek.

Before the time-tractor lay Pascal, stretched out, inert, like an empty sack. Over him stood Cabot, gun flaming. Another one of those purple flames reached out, hit a boulder beside Yancey. The boulder glowed with sudden heat, started to chip and crack.

With mighty leaps, Yancey skidded down the slope, landing in a crouch

beside Pascal. He grasped the old scientist by the shoulder and lifted him. As he straightened, he glanced at the strange machine in which the scaly men had come. Through the open door he could see a mass of machinery, with banks of glowing tubes.

Then the machinery erupted in a thunderous explosion. The roar seemed to blot out the world. For one split second he glanced up and saw on Cabot's face a baleful grin of triumph, knew that he had fired a shot which had wrecked the scaly men's machine.

THE ground seemed to be weaving under Yancey's feet. With superhuman effort he plodded toward the door of the time-tractor, dragging Pascal. Hands reached out to help him, hauling him inside.

Slowly his brain cleared. He was sitting on the floor of the tractor. Beside him lay Pascal and he saw now that the scientist was dead. His chest had been burned away by one of the pencils of purple flame.

Cabot swung down on the door-locking mechanism and stepped back into the room.

"What are they, Jack?" Yancey asked, his mind still fuzzy.

Cabot shook his head wearily.

"Don't you recognize them?" asked Cameron. "Horns, hoofs, tails. Today we've seen the devil in person. Those are the people who gave rise to the ancient legend of the devil."

Yancey got to his feet and looked down at Pascal.

"Feel bad about that," he whispered.

"He was a regular guy."

Cameron nodded, stiff-lipped.

From a port Cabot spoke.

"Those devil-men are up to something," he announced. "They'll probably make it hot for us now."

He wheeled on Cameron.

"Can you get us out of here, Hugh?"

Cameron considered the question.

"Probably could," he said, "but I would rather not try it right now. I think we're safe here for a little while. That time brain is a tricky outfit. Know its principle and given time I could figure it out so I could take a

try at it. If worse comes to worse, I'll do it. Take a chance."

He walked to the time-brain apparatus and snapped the switch. The brain glowed with a weird green light.

"That must be a time-machine out there," said Yancey. "Another machine would explain the treasure cache. I'll bet those birds are robbing stuff through time and bringing it back here to cache it. Damn clever."

"And they landed up ahead to cache some stuff and found some of it missing. Then they came back through time to find out what was wrong," supplied Cabot.

Cameron smote his thigh.

"Listen," he said. "If that's right it means time-travel is well established up ahead in the future. We might be able to reach help there. Those fellows out there must be outlaws. If so, we'd rate some help."

"But how will we reach the future?" demanded Cabot. "How will they know we need help?"

"It's just a chance," said Cameron. "A bare chance. If it doesn't work I can always try to get us back to the twentieth century, although the chances are nine out of ten I'll kill all of us trying it."

"But how?" persisted Cabot.

"Pascal said the 'time force' or whatever the brain generates, is similar to electricity. But with differences. It is important just what those differences are. I don't know, not enough, anyhow. The time mechanism is run by the force generated by the brain, but we have regular electricity for the tractor operation."

Cameron pondered.

"I wonder," he mused, "if the time force would be sufficiently like electricity to operate the radio?"

"What difference would that make?" snapped Yancey.

"Maybe we could broadcast in time," Cameron suggested.

"But that brain generates very little power," protested Yancey.

"We might not need much power," Cameron told him. "It's just a blind shot in the dark. A gamble—"

"Sounds plausible," Yancey asserted, "let's take a long shot."

CAMERON switched off the brain mechanism and with lengths of wire connected the radio to the mechanism. Then he switched the brain back on again. The sending set hummed with power.

"Better start gambling," said Cabot. "Those boys out there are beginning to ray us. Playing that purple flame on the tractor."

Cameron's voice boomed out, speaking into the microphone.

"SOS . . . SOS . . . party of time travelers stranded in the Thames valley, near the village of Aylesford, approximately seventy thousand years before the twentieth century. Attacked by beings resembling the devils of mythology. SOS . . . SOS . . . party of time travelers stranded in the Thames valley. . ."

Cameron's voice boomed on and on. Yancey and Cabot stared out of the ports.

The devil-men were ringed around the tractor, playing the purple beams on the machine. They stood stolidly, like statues, without a trace of emotion in their features.

The tractor was beginning to heat up. The air was becoming hot and the metal was warm to the touch.

The interior of the tractor suddenly flashed with a green burst of flame.

Yancey and Cabot wheeled about.

The brain mechanism was a mass of twisted wreckage.

"Blew up," said Cabot. "Something in the purple rays. This is the end of us now if our time-casting didn't work. We can't even operate the time-mechanism without the brain."

"Look here!" cried Cabot from a port.

Cameron and Yancey rushed to his side.

Swooping down toward the tractor was a black ship, an exact duplicate of the time machine of the devil-men.

Like an avenging meteor the black craft tore downward. From its nose flashes of green fire stabbed out viciously and living lightning bolts crashed among the devil-men.

Terrified, the devil-men tried to scurry out of reach, but the lightning bolts sought them out, caught them,

burned them into cinders.

"A ship out of the future!" gasped Yancey. "Our radio worked!"

CHAPTER V

The Thrill-Hunters

ANDY SMITH spoke earnestly. "There's just one thing," he said. "We can't go back to the fifty-sixth century. Steve and I stole this time-machine. Lucky for you fellows we did, because apparently no one else caught your radio message. But if we're caught back there it means a life stretch on Mercury for us. Our machine is the second one ever stolen. The first one is over there."

He nodded toward the devil-men's machine, blasted on the hillside.

"Hell," said Yancey, "what are we blabbering around about? We have a machine that will take us through time and space. Any place we want to go. There's plenty of room for all of us. The ship's loaded with treasure. Do we have to decide where to go? Why can't we just skip around and stop wherever things look good to us? Like those Centaurians. Me, I don't care whether I ever go back to the twentieth century. I didn't leave anybody back there."

"Just an old maid aunt," Cabot spoke for himself. "And she didn't approve of me. Figured I should have settled down and made more money—added to the family fortune. Thought hunting was silly."

The four of them looked at Cameron. He grinned.

"I'd like to find out something about what the next couple, three hundred thousand years have done in the way of science," he admitted. "Maybe could pick up a few tricks. Skim the cream of the world's science. Probably lots of ideas we could incorporate in the time-flier."

"Wish we knew more about that time-brain," mourned Smith. "But I can't understand it. The fifty-sixth hasn't anything like it. Our machines are run on an entirely different basis.

Warping of world lines principle."

They sat in silence for a moment. From the river came the roaring below of a mammoth bull.

"Say," asked Yancey, "has anyone seen anything of One-Eye?"

"No," said Cameron. "He must have hit for high timber when all the fire-works broke out."

"By the way," asked Steve Clark, "what are you going to do with Pascal's body?"

"Leave it here," suggested Yancey. "In the tractor. If we worked a million years we couldn't erect a more suitable burial site. Shut the door and leave him there. With his time brain. No one else will ever build another. It was all in Pascal's head. No notes, nothing. Just his brain. He told me he meant to write a book when he got around to it. We can't take the body back to the twentieth century and deliver it to the authorities. Because nobody would believe us. They'd throw us in the can."

"We might take it back and leave it somewhere on his premises for someone to find," Cabot suggested.

Yancey shook his head.

"That would be senseless. Just stir up a lot of fuss. An autopsy and an inquest and Scotland Yard half nuts over a new mystery. Pascal would rather be left here."

"I'm inclined to agree," said Cameron.

"That's settled then," said Smith getting to his feet. "What do you say we get started? We got lots of places to go."

Clark laughed.

"You know," he said, sweeping a hand toward the wrecked time-flier, "I get a big kick out of the way this Centaurian business turned out. For five hundred years those long-tailed gangsters just toured all over hell, robbing everything that looked like it was worth taking. Dragging it back into prehistoric time and hiding it away. And in the end all their work was done so that five Earthmen could use it to finance a life-time of time wandering."

Andy Smith looked thoughtful.

"But," he said, "the Centaureans

must have been robbing for some purpose. They must have had something in mind. They amassed billions of dollars in treasure. For what reason? Not just for the love of it, surely. Not just to look at. Not just for the thrill of taking it. What were they going to do with it?"

"There," said Cameron, "is one question that will never be answered."

OLD One-Eye squatted inside the time-tractor.

It was snowing outside, but the tractor provided an excellent shelter and One-Eye was well wrapped in furs and skins. In one corner of the tractor was plenty of food.

Wrapped to his ears in a great mastadon robe, One-Eye nodded sleepily. Life was pleasant for the old Neanderthaler. Pleasant and easy. For the tribe which had wandered into the valley and found him living in the shining cave had taken him for a god. As a result they brought him food and furs, weapons and other offerings, gifts to appease his wrath, to court his favor. For who could doubt that anyone but a god would live in a cave that glinted in the sunshine, a cave made of hard, smooth stone, beautifully shaped, a cave that had no draughts and was secure against the attack of any wild beast.

One-Eye, dozing, dimly remembered the day when, curiously and idly jiggling at the door handle of the tractor, the handle moved in his hand and the door had swung smoothly open.

Henceforward the tractor had become One-Eye's cave. In it he had lived through many summers and many snows. In it he would live out the rest of his days.

One-Eye remembered the strange friends who had come to him in this shining cave. They had gone, long ago. And One-Eye missed them. Vaguely he was lonesome for them. Many times he wished they might come back again.

The old Neanderthaler drew in his breath with a slobbering sigh. Perhaps some day they would. In the meantime, he kept close and jealous

guard and maintained the proper respect to the one of them that had stayed behind, the one whose bones lay neatly arranged in one corner of the tractor.

But they had remembered One-Eye before they left, these other friends of his. Of that One-Eye was sure. Had they not left behind them, in the tractor, for him to find, the great shining stone which he had given them so long ago in exchange for the shining, keen-edged knife?

One-Eye slobbered pleasurably now as he looked at the stone, sparkling and flashing with hidden fire as it lay in the palm of his hand. One-Eye could not know that the stone had been left in the tractor accidentally,

overlooked by the 20th and 56th century men before they left on their excursion into time. Not knowing this, One-Eyed held close to him the thought that these friends of his had left behind a token . . . a token that some day, perhaps, they would return and sit around a fire with him and give him bones to gnaw and scratch his back where it itched the most.

Outside the wind howled dismally and the snow slanted down in a new fury. A blizzard raged over the Thames valley.

But One-Eye, snug in his furs, comfortable in his old age, a god to his contemporaries, played with a diamond the size of a man's fist, unmindful of the weather.

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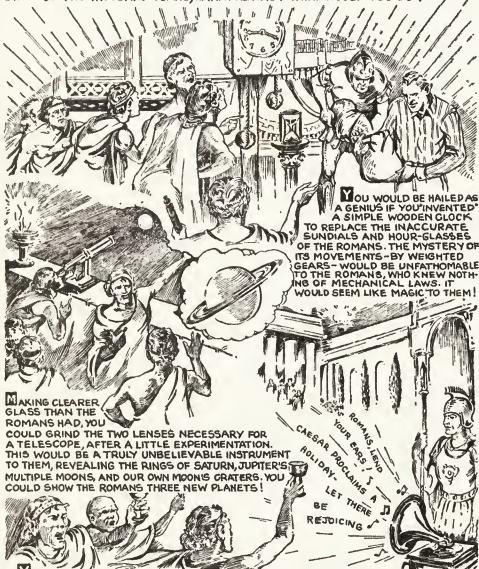
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IF YOU WERE STRANDED IN TIME!

BY JACK BINDER

SUPPOSE SOME FOURTH-DIMENSIONAL PHENOMENON CATAPULTED YOU BACK TO THE DAYS OF CAESAR, WITH THE POSSIBILITY OF A RETURN TO YOUR OWN TWENTIETH CENTURY ENTIRELY REMOVED. EQUIPPED WITH AN ELEMENTARY UNDERSTANDING OF VARIOUS SCIENCES, HOW WOULD YOU CAPITALIZE ON YOUR KNOWLEDGE OF FUTURE EVENTS AND DISCOVERIES? COULD YOU, WITH A HEAD-START OF TWO THOUSAND YEARS, EARN A LIVING? WHAT WOULD YOU DO?



YOU WOULD BE HAILED AS A GENIUS IF YOU INVENTED A SIMPLE WOODEN CLOCK TO REPLACE THE INACCURATE SUNDIALS AND HOUR-GLASSES OF THE ROMANS. THE MYSTERY OF ITS MOVEMENTS—BY WEIGHTED GEARS—WOULD BE UNFATHOMABLE TO THE ROMANS, WHO KNEW NOTHING OF MECHANICAL LAWS. IT WOULD SEEM LIKE MAGIC TO THEM!

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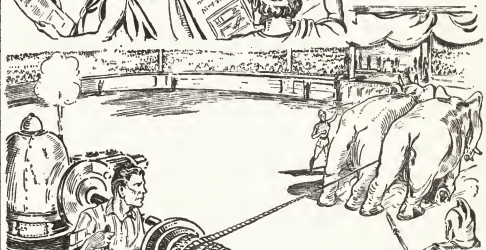
Next Issue: IF THERE



CHEAPLY MADE FROM OLIVE OIL AND WOOD ASHES, SOAP (UNKNOWN TO THE ROMANS) WOULD MAKE YOU AN EASY LIVING, ONCE THE ROMANS WERE ACQUAINTED WITH ITS GREAT CLEANSING POWERS. YOU COULD SHOW THEIR METAL-WORKERS HOW TO MAKE SUCH ASTOUNDING IMPLEMENTS AS SAWS, SCISSORS, HAIRPINS, NAILS AND SCREWS!



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TIDAL MOON

Shackled by the Gravity of Mighty Jupiter, Three Vertical Miles
of Water Rush on to Blanket the Surface
of Ganymede!

By **STANLEY G. and HELEN WEINBAUM**



BO B A M - HERST shivered a little despite the heated interior of the autobus, but grinned none the less as he made out the frosty towers of Hydropole. He was always glad to return to the polar city, if only for the pleasure of staring up at buildings piled story upon story like those of his native Syracuse on a gray planet some half a billion miles sunward.

Hydropole, south polar city of Jupiter's third major moon, Ganymede, was a chilly town at all seasons with its thirty degree Fahrenheit mean, and its variation of only ten degrees. But it was certainly the only settlement on the satellite that was worthy of the title of city.

Amherst had served four terrestrial years on the watery planet as collector for Cree, Inc., moving from town to town gathering the precious medicinal moss, to take it finally to Hydropole, the rocket port, for trans-shipment to Earth.

He was one of the hundreds of such collectors for the giant company, each with his own route, each picking his own way from town to town, riding his hipp (the sea-horse of Ganymede, *Hippocampus Catamiti*) through the wild torrents of the afterfloods, past mountains whose locked valleys were apt to spill countless millions of tons of water upon him with no warning save the crash of the bursting mountain walls.

Only in Hydropole was there safety. Situated on the south pole, it escaped the great wash of water which, due to the strong gravitational pull of Jupiter, every three months encircled the tiny moon.

As a result, only in, and for a few miles around Hydropole, was there vegetation. Save for the strange moss, cree, which clung so close to the rocky crevices of the mountain that even the raging tides could not pry it loose, not a living plant broke the great, gray expanse of rock.

So, on Ganymede, all life revolved about the blue moss, cree. Ages back, the Nympos, natives of Ganymede, had carried it deep underground where, piled layer after layer on the solid rock around the doomed villages, it served as earth. There, with seeds garnered from the small area about Hydropole, they grew the small variety of food on which they lived.

Above ground the moss had a deep, blue color. As litmus paper, colored by the Earth lichen, *rocella tinctoria*, shows the presence of acid or alkali by its color change, so Ganymedian cree reacted to the ammoniated atmosphere of the planet. The air underground, however, artificially produced, had little ammonia content, and there the moss was red. Indeed, even the mountain cree, after being washed by the hydrogen containing waters of the flood, for a short time showed red.

Up to a short time ago, the gatherers had had only a limited time in which to pick the moss. Red cree lacked the medicinal quality of the blue in which, partly because of its chemical reaction to the ammoniated air and partly due



The animal looked like some grotesque nightmare. Amherst drew his gun and fired.

to the latent eggs it harbored, lay the curative power so much in demand on Earth. Now, however, Carl Kent had evolved a formula by which cree picked red might be endowed with the healing power of the blue. So, in the area around his small trading station in Aquia, red as well as blue cree was gathered.

THE autobus turned silently down the wide street of Hydropole. Robot-guided, insulated from noise and cold, it was certainly preferable to traveling by hipp. But hipp travel was unavoidable from here on. The trip to Aquia verged on the wet side of the planet—the side from which burst the mighty floods. So, added to steep, rocky drops, impassable by autobus, were the dank, muddy flats which only the hipp could traverse.

Amherst zipped the parkalike garment closed about his long, muscular body, pulling the sillicellu visor before his rugged features before he stepped from the autobus. The cold was penetrating. Even vacuum suits—misnamed, for they did not work on the principle of the thermos bottle but had the inner layer held from the outer by thin, radium-warmed wires—were scant enough protection.

Turning, he watched the Nympos unload the autobus. There was something revolting about them as they waddled about on their short legs, jointed only at hip and ankle; their heads, flaring into strange mushroom tops almost hiding their noseless faces; their arms, long and webbed to their bodies.

"Umhurr." He turned to the queer, throaty croak. It was the Nympos' version of his name.

"Yes?"

"Go see." One long, webbed arm pointed in the direction of the rocket port office.

"Oh, thanks." He walked toward the circular glass dome, under which MacGowan sat looking, for all the world, like some giant god's experiment under a bell jar.

"Hello, Bob. How goes it?" MacGowan's round, smooth-cheeked face was sharp contrast to Amherst's rather

angular, wind-beaten features.

"As always. What's new here?"

"Nothing. Except there's a rumor that they've discovered red cree on Io."

"Io? That's Jupiter's first major moon."

"Right. And a skin exporting company called Ionian Products has it tied up as tightly as Cree, Inc., has Ganymede."

"Well, red cree is no good, Mac. There's no curative power in it."

MacGowan leaned back in his chair.

"You forget," he answered, "that since Carl Kent's discovery we pick red cree on Ganymede."

"Yes. I did forget." Amherst stretched his long legs before him. "I haven't been to Aquia since the formula's been in use there." For a moment his thoughts dwelt on the small domed settlement, on the young girl, Carol Kent, with her pixie face and laughing eyes. "Say," he sat up suddenly as the full implication of MacGowan's words penetrated his mind, "that's bad. Those birds will glut the market!"

"Well, so far it's only a rumor. And Carl Kent is the only one who knows his formula anyway. Still, you'd better tell him when you get to Aquia. I got the dope two months ago."

"Amherst shook his head.

"That's ironic. In 2083, two months' old news has to be carried by hipp. It's like going back to post medievalism."

"It is. But you know radio is useless on the flood belt of Ganymede. The atmosphere's too disturbed. It's only at Hydropole that we can get reception." MacGowan's eyes caught a notation on his desk. "Oh, I almost forgot. I've got company for you to Aquia."

"Who?"

"Kirt Scaler." He spoke into his desk transmitter. "Ask Mr. Scaler to come in."

"I don't know what he's here for," he continued, turning back to Amherst, "but his papers are in order and I don't think he'll cause you much trouble."

Yes, Amherst agreed, as Kirt Scaler entered, this man certainly looked as if he could take the hazardous journey to Aquia in his stride. His red-brown

THE AUTHORS OF THIS STORY

WHEN the late Stanley G. Weinbaum's first science fiction story, *A MARTIAN ODYSSEY*, appeared in the July, 1934, issue of *WONDER STORIES*, it skyrocketed a new author to fame—and opened up an entire new field in fantastic literature.



Helen Weinbaum

For Stanley G. Weinbaum was the first s-f author to recognize the fact that alien worlds offered alien environments—and alien forms of intelligent life.

Written in typical Weinbaum style, *TIDAL MOON* warmly revives memories of the interesting variety of interplanetary story originally introduced by this popular author.

TIDAL MOON was conceived by Stanley G. Weinbaum himself. Helen Weinbaum, his talented sister, who contributes mystery fiction to our companion magazines, completed the narrative. We hope you'll find the tale as charming as we did!



Stanley G. Weinbaum

eyes, on a level with Amherst's own, had the serene out-flowing look of the hardened adventurer. One saw him gazing long distances, accepting danger, meeting and conquering it. His teeth flashed white against tawny skin, and the steely grip of his hand did not belie the reckless strength of his appearance.

"Business trip?" Amherst asked.

"No, just touring."

Amherst smiled at the idea of anyone's taking a pleasure trip on Ganymede.

"You've traveled by hipp, I suppose."

"No. This is the first time I've left earth."

Strange how mistaken one can be, Amherst reflected. He could have sworn this man had been hardened by such adventure as existed, nowadays, only on the planets.

"In that case," he smiled, "you've got something interesting in store for you tomorrow."

FLOOD time was coming near. Seasickness and Amity, the two hipps, were restless. Always, at flood time, the instinct to be free rose in them, filling them with a wild yearning to buck the mountainous tide of water, to swim fiercely to the top, there to sport with the large Gamma Rorqual, that ferocious whale-like mammal with the long spiked tooth from which only the hipps, because of their hard, outer shell, were safe.

Even when the flood was not imminent, hipps were not the easiest riding. They walked with a queer, undulating motion: the two feet forward first while the body rested on the tail, then the tail brought to meet the feet. On their twenty-foot long body, the rider had to pick his seat carefully. If he sat too near the head, the animal would not move: too near the tail meant that he would be jarred at every step. A little behind the legs was best. There he could ride with a minimum of jolting.

Night was coming on. Though the men had been out only a few hours, the sky was already darkening. Days were short in Ganymede. Thus far, they had spoken intermittently; the discomforts of travel occupied much of their attention. Scaler, it turned out, was a rather taciturn man, revealing little of his past and nothing of his reasons for touring Ganymede. He rode silently, looking neither right nor left, keeping his eyes fastened on the green-scaled back of Amity, his hipp.

There was, however, not much to look at. If one excepted the scattered stilt houses in the flats, nothing broke the monotony of mountains, rocks and mudholes. Still, Amherst reflected, stilt houses ought to be interesting to a man from Earth. He remembered the first time he had seen the square boxlike hives made of compressed cree, standing on twenty-foot poles—how he had wondered if, indeed, they could survive the flood. No one had stayed above ground long enough to find out.

Carl Kent, however, with his inquiring mind, had found out how they worked. At the first ten feet of water, the Nympos drew the stilts up through the sides of the house, allowing it to float. But no one, save the Nympos who lived inside one, could say for sure whether it survived the flood, for the water carried it so far from the original starting point that there was no way of checking.

Suddenly a scream broke the air—a raucous, harsh scream, but, unmistakably, a scream of pain. They were rounding down a mountain and, as they covered the next turn, they came upon a hideous struggling mass of flesh. While from a slimy, fat body long tentacles gripped the rock, others clung to the writhing form of a Nympos. Creeping, in the manner of a snake, they encircled his flailing arms, drawing the heavy body with its long center spear greedily toward the native.

Scaler stared horrified, his face paling behind the visor. The animal looked like some grotesque nightmare. Amherst drew his gun and fired. There was a soft hiss, before the thing collapsed, spilling its yellowish blood on the rock.

The Nympos sprang to his feet, chat-

tering wildly, then, rushing to a crevice in the mountain where the cree showed blue, placed a handful of the wet moss on his wounds.

FOR a moment the tentacles waved feebly; then, falling into the sticky mess which had once been a body, lay still. Only the long spear retained definite shape.

"There," Amherst said, "is evolution in a nutshell."

"It hadn't evolved very far," Scaler breathed deeply. "It looked like a jelly fish with a horn."

"Perhaps it was once jelly fish," Amherst returned. "It's hard to tell now. It has metamorphosed too often from its original form. Like the butterfly which goes through successive stages from egg to larva, larva to chrysalis, chrysalis to butterfly, this, starting out as an amoebalike protoplasm and, like the amoeba, absorbing food at every part of its body, changes form each time it surrounds its prey."

"You mean it doesn't absorb, it *becomes* what it eats?"

"Exactly. This amoeba attaches itself to a higher form of life and becomes that form, always, however, retaining its original power of *becoming* its next prey. But, here's the strange thing: certain characteristics of its previous meal may remain even after it has adopted another form. This one, for example, was part Gamma Rorqual, as you can see from the spike, part land leet—it had land leet tentacles—and if we hadn't come along, it would have been part Nympos as well."

"Funny planet," Scaler remarked.

Slowly, they continued down the mountain, reaching now and then a bleak plateau which wind and water had swept to glassy smoothness. The flying mammals which always heralded the flood swooped overhead.

As they crossed one of the plateaus, above the roar of the wind they heard a loud beating. A mammoth bird, jet black against the mountain, its two sets of wings flapping alternately at a spread of thirty feet, came toward them. Flying the gale, it neared them quickly. For a second, the men sat transfixed; then, wrenching themselves

from the coma of fear, drew guns. Seasickness beat her tail frantically, jolting Amherst's gun from his hand.

"Don't shoot, Scaler," he yelled, diving after the spinning weapon. "You'll never kill it."

Before Amherst could reach his gun, Scaler fired. His shot, far to the right, missed the body. Yet the bird dropped, thrashing, to the ground. Again he fired and, with a scream so shrill it hurt their eardrums, it lay still.

"Whew! That was close," Amherst said. "Say, how did you know?"

"Know what?"

"Know enough to break the wing muscle."

"It's a Blanket Bat," Scaler answered. "It doesn't kill, but it draws electrical energy from its prey and leaves it weak to the point of helplessness. That's the only way you can ground them too. There's a similar species on Io."

"Right." Amherst looked speculatively at his companion. "But I was sure a man with no planetary experience would have aimed left, at the heart. That would have been unfortunate. For, as you undoubtedly know inasmuch as you hit it squarely on your second shot, the heart of the Blanket Bat is in the center."

Scaler shrugged.

"Even on Earth," he answered, "those things get around."

When they reached the bottom of the mountain, it was too dark to go further. Jupiter shone pale and ghost-like in the night sky and far off, a tiny pinprick in the black, was Earth. The wind had risen, so they tethered Seasickness and Amity to a rock and took shelter in the lee of the mountain. A few land leets, disturbed by their presence, dragged themselves slowly from the rock. Amherst, who always preferred fresh food to the concentrates of his kit, caught and cooked them in the ray stove for dinner. The octopuslike animals were good eating, so afterward the two men settled down contentedly for the night.

THE next morning, as soon as the sun had risen, they started on their way. Today their travel was over the

flats where, every now and then, a stilt house stood high on the bleak landscape. Once in awhile they found a Nymphus lying lazily before one, but they did not stop. In the outlying sections, Nymphus spoke a Ganymedian patois which few Earthmen understood.

As they splashed along, Scaler broke a long silence to ask, "By the way, Amherst, just what is cree?"

"Cree is the source of the drug *crephine* used in the treatment of all the malignant diseases. It not only deadens pain, but heals."

"But there's so much of it on Ganymede," Scaler objected, "it doesn't seem as if there'd be use for all of it."

"It takes over a bale of cree to produce one ounce of *crephine*," Amherst answered, "And in the past ten years the demand for it has increased enormously. Besides, on most of Ganymede the time for picking is short."

"You mean on account of the floods? But why *most* of Ganymede then? Why isn't gathering time short on the whole planet?"

"Because," Amherst started—then, "I was thinking of Hydropole," he amended. "The floods don't cover that but, of course, there's little cree there. Yes, the time for gathering is short on account of the floods."

"And on account of the color change after the floods?" Scaler asked slyly.

"Yes, that's true. How did you know?"

"I guess I read it somewhere. By the way," he asked casually, "what's the trader at Aquia like?"

"Carl Kent? He's a nice fellow. Lives there with his daughter, Carol."

"Is that where we stay out the flood?"

"Yes. They're glad enough to see a new face."

"There's no way of leaving the village during flood time, I suppose."

"None whatever. You couldn't open a door against the pressure of the water even if you wanted to, which no one does. Once underground, you've got to stay there!"

Scaler hummed to himself a few minutes before he spoke again.

"When does this next flood pass?" he

asked finally.

"Let's see." Amherst shifted his position on Seasickness' back. "It's due in two days now. You can probably leave Aquia about May twelfth, terrestrial date. By the way," he faced Scaler squarely, "how do you expect to get back to Hydropole? You'd never find your way alone."

"Oh, I figured that out with Mac-Gowan. I'll wait there until you make the trip to Dripwater and Weepy Hills. You always stop at Aquia on your way back, don't you?"

"Yes. But I can't see what you expect to do for two months in the settlement at Aquia."

"More sightseeing, perhaps," Scaler smiled.

When night came on, they did not stop. Flood time was too close to waste time in rest. Now, near the wet side of the planet, mudholes occurred frequently; though the hipps braved them valiantly, progress was slow. The wind had increased and, riding against it, they were forced to hold their seats tightly.

AFTER a few hours, they came to a mountain. Knowing the dark, rocky climb would slow them still more, Amherst decided to cut around on the flats. Riding the uncharted ground, half asleep, suddenly he felt a bright light shining on him. In the mountain's shadow, the night was black and the unexpected glare shocked him awake. From the side a huge, black bulk, that blinding light in its center, moved toward him. A grinding sound, as of rocks rubbed one on the other, deadened his ears, above everything, he was conscious of the light.

Scaler, riding nearest the mountain, continued forward, but Seasickness suddenly switched her course, heading straight for the glare. Amherst jerked the guiding rein, but she did not turn. Then, as the beam fell full on him, he felt himself being drawn. Ahead was the light, bright, warm, hypnotizing—at either side was nothing. . . .

He felt his mind sinking, felt his body go lax, lean forward. Then something flew before his eyes. For a second, the light was blocked off, and

in that second his strength flowed back. At once, he realized the thing ahead had been drawing his will from him—that if he were ever to get away, he must shield Seasickness' eyes and pull the rein hard. Now the bulk was so close that he could make out a great, yawning hole, inside which a pistonlike rod moved up and down.

As he stared, a rock rolled into the hole and, on the descent of the piston, was ground to bits. With a mighty effort, he shut his eyes. Then, raising his visor to the freezing air, he gripped Seasickness' reins in his teeth and, blindfolding her with his hands, pulled with all the strength he had in him. She swerved.

Now—if the thing didn't change direction, they were safe. Otherwise they were sunk. Without looking full into the light, Amherst watched, breathing deeply to still the pounding of his heart. Safe! The thing moved steadily forward, unaware that its prey had escaped.

Scaler, outside the hypnotic power of the light, asked what the trouble was.

"We couldn't change direction while the light shone on us," Amherst told him. "But that wasn't the strangest thing. That beacon or animal or whatever it was, *ate rocks!* Outside of the Pyramid Builder of Mars*, I've never heard of that before."

"Evidently it wanted to add you to its mineral diet," Scaler observed.

"And it almost did." Amherst laughed in relief. "So it must be the extreme of omnivorous, needing life as well as minerals to keep it going."

"Just another verse in the saga of evolution." Scaler shifted his position on Amity's back and closed his eyes for a few minute's rest.

Two terrestrial days later they sighted the domes of Aquia which, huddled on the Ganymedean waste, resembled the half-buried eggs of some giant bird, left ages back to turn the same slate gray as the rest of the landscape. Faint on each dome were the outlines of a door, sole evidence of human habitation in the clustered mounds. Still, to the two men, stiff and tired after days and nights of riding, the sight of

* See *A Martian Odyssey*, by Stanley G. Weinbaum.

the small, domed village was cheering.

"So this is Aquia," Scaler sighed. "Aquia of Ganymede. It sounds almost Biblical."

From far away came a dull roar. "Just to make it more so," Amherst answered, "here's the flood."

BOB AMHERST looked admiringly at the slim girl in the trading station.

"Is it you, Carol, or is it what you're going to be ten years hence?" he said lightly, his eyes twinkling. Last time he had seen the girl, she had been a gangling child of sixteen or so; now she was a blonde goddess, rounded, appealing, vital. Her golden hair and blue eyes were in sharp contrast to the drabness of the trading station. She seemed to have grown up all at once.

"I hope it's both." She shut the door against the freezing outside air.

"Why, you're beautiful." To hide his astonishment, he spoke to her as a child. "Your hair is combed, and your face is clean, and—"

"And you're too fresh." Her eyes turned to Scaler.

"Oh, I forgot. This is Mr. Scaler, Carol."

Scaler's brown eyes swept over her appreciatively.

"Where's your father?" Amherst asked.

Carol's face sobered.

"Father didn't come back last flood time. I'm carrying on."

Didn't come back! There was no need to say more. Everyone knew what it meant to be caught away from the domed village when the torrents of water came thundering down. It was tough! Carl Kent could be spared least of the traders on Ganymede. And it was a pity that he had to go so soon after his precious formula had been completed. It was too bad for Carol, too. She was all alone now.

They followed her through the underground passage which led from the trading station to her living quarters. Under the domes, so exact in their engineering that they could withstand the terrific pressure of water during the flood, the air was warm. They removed their vacuum suits.

Outside Carol's door which, like all the rest opened onto a central square, Nymphus and Earthmen scurried about to make ready for the deluge. Like a huge ant hill, the village teemed with activity. Tanks had to be made ready to store the water from which their oxygen came. The nitrogen mixers had to be checked so that they would be prepared to blend perfectly the two gases and insure the air supply for the duration of the flood.

While Amherst went about his business, looking over the cree, tethering the hipps in their floating cages anchored to the village, seeing that all was ready for the tidal rush, Scaler and Carol sat together in the warm, Earthlike room that Carl Kent had furnished.

"When you said you were carrying on here, the most important trading station on Ganymede, I could hardly believe it." Scaler's warm, brown eyes rested admiringly on the girl's face.

"I have to. I'm the only one who could. Father was caught in the flood before he had a chance to set up laboratories in the other stations."

"Was he planning to? I should think it would be dangerous to let too many people learn his secret."

"Not at all," Carol answered. "There's no cree anywhere but Ganymede, and Cree, Inc., covers the entire planet."

"Oh, I didn't know." He moved over to sit next to her. "It's too bad for you to bury yourself here," he said abruptly. "You don't belong. You should be living on Earth—seeing, doing and, most important, being seen."

CAROL smiled. She had never visited the small pinprick in the black called Earth, but she had read of it, read of its cities built into the air, its underground highways, its beautiful women. "Tell me about the World," she said softly. "Is it so different from Ganymede?"

"So very different, I don't know where to begin."

"I've always wanted to see New York." She looked enviously at Scaler.

Amherst entered the room in time to hear her last words.

"It's nothing but froth, Carol," he broke in. "There are many things on Earth we wouldn't want on Ganyমেদে."

Scaler smiled.

"Gangsters and greed," he said, "went out long ago."

"Gangsters did," Amherst answered shortly. Suddenly the thought of Scaler's presence during the long flood period annoyed him. Perhaps, without knowing, he had been looking forward to being alone with Carol. Now, he realized that Scaler, shut in the underground village with nothing to occupy his time, would make that impossible.

At that moment, deep underground as they were, they heard the crash of mountain walls as the flood came pouring down. As always, in the village of the cree-gatherers, it was quiet, almost menacingly quiet, as if everyone stood impassive waiting to see whether or not this time the domes would hold. For a few hours, until the air tanks were working efficiently, they would have this strange, dead sensation in their heads.

AS Amherst had foreseen, Carol and Kirt Scaler spent much time together. Often they walked the narrow tunnels leading to the farms and there stood on the flat-covered expanse, like some tremendous basement, the water valves overhead dripping flood water brought from the surface to the crop below. And sometimes they stood by the nitrogen mixers, deafened by the mighty roar as the artificial air came pouring out.

Indeed, Scaler seemed to have perpetual interest where life at Aquia was concerned. Often Amherst entered a room to hear him questioning Carol about various technicalities. But at other times, he fought clear of anything to do with Ganymede and, instead, talked at length about the world Carol had never seen. At such times, she listened fascinated, a faraway look in her blue eyes as if they saw, through Scaler's, the things he was describing.

As the days passed, Amherst became more and more aware of Scaler's attraction for the girl though, as yet, he

was not sure whether it was the man himself who charmed her or the world he came from. Thinking to find out, he waited for one of the few times that he and Carol were alone together. Then, walking over and taking her chin in his hand, he asked, "Just how much do you know about Kirt Scaler, Carol?"

"Not very much. What difference does it make?"

"It might make a lot. It might be a revival of the old, old stories of the city slicker and the farmer's daughter."

She jerked away angrily.

"Mind your own business, Bob Amherst."

He put his arm around her.

"You're my business."

"Since when."

Lacking an answer, he pulled her to him and kissed her roughly. She jerked away, flouncing angrily from the room.

He watched her go absent-mindedly, not so much concerned with her anger as with trying to decide what it would mean to him if she were indeed serious where Kirt Scaler were concerned.

Since Carl's death, he had felt an increasing sense of responsibility for Carol—and something more too. For Carol, even as a young girl, had aroused in him a more than friendly interest. So the thought of her falling in love and, perhaps, marrying someone else was painful. Besides, the more he saw of Scaler, the more he realized how uncommunicative the man really was. He had not yet given reason for his trip to Aquia other than the obviously ridiculous one of "touring."

And surely, attractive as Carol was, tales of her charm had not drawn him almost four hundred million miles through space. Still, aside from Scaler's interest in the life at Aquia, so far Carol seemed his only excuse for coming.

For the next few days, Carol treated Amherst coolly, never giving him a chance to speak to her alone and continuing to spend much time in Scaler's company. Amherst seldom entered a room but that he saw the golden head in close proximity to the brown, and heard, with a twinge at his heart, the soft note in Scaler's voice.

As the days passed, however, Scaler seemed to become restless. Often he wandered the village alone, not waiting for Carol. Once Amherst found him scanning a terrestrial calendar and figuring on a small pad he carried. Consequently, Amherst's heart lightened a bit, though, as yet, he could not break through Carol's reserve.

JUST a day and a half before complete ebb, he was sitting alone in the trading station when the girl entered.

"It's funny," she said abruptly, "I can't find the formula. I know it by heart, of course, but the paper is gone."

"Gone!" Amherst jumped to his feet, recalling, for the first time in weeks, the rumor that red cree had been found on Io.

"Don't get excited, Bob," she said coldly, seating herself leisurely. "What would anyone want it for?"

"They've discovered red cree on Io." Amherst was halfway out the door. What a fool he had been not to tell Carol, especially after he had been told to bring the news to Carl. She hurried to follow him.

Inside the laboratory, he turned to face her.

"It's my fault," he groaned. "I should have told you. News of your father's death must have knocked it from my mind. Are you sure it's gone? Nothing seems to have been disturbed."

"Yes. I kept it here." She opened a drawer.

"Who has been in this room, Carol? Who, besides yourself, has ever been here?"

"Some Nympos gatherers, when Father was alive."

"Who else?" Amherst paced the floor impatiently. "They haven't the intelligence to steal it." He paused for a moment. "Did you ever bring Scaler in?" he asked.

"Yes, once. He wanted to see red cree under treatment."

"Of course he did." Amherst turned abruptly. "Stupid of me not to have suspected it. He was undoubtedly sent here by Ionian Products just to get the formula. Touring, indeed! No wonder he recognized the Blanket Bat!"

"What shall we do?" Carol rummaged helplessly through the papers in the drawer.

"Search the village. He can't possibly leave until the water ebbs and that's at least a day and a half away. He must be here somewhere. There's no place else to go."

They hunted the village for Scaler, but the search was fruitless. It seemed impossible for a man to disappear in the small underground village, and yet five precious hours had gone and they had found no trace of him. It was incredible.

"Bob, what will it mean to Cree, Inc., if Ionian Products exports blue cree to Earth?" Carol asked anxiously after a while.

"Severe competition, a glutted market, shrinkage in sales, eventual bankruptcy, perhaps. You know there's an enormous expenditure required to keep the company going on Ganymede."

"Then we've got to find Kirt Scaler. Father would—would have hated that!"

"I know." Amherst stood undecided for a moment. "There's only one thing left for us to do though: we must start over. Somewhere, we have missed him."

Three hours later, footsore and weary, they returned again to the farms, their second quest as unproductive as the first.

Far in the distance a lone Nympos worked the field, at the entrance to the tunnel.

"You know strange Earthman?" Amherst spoke wearily to the toiling Nympos.

"Yeh." The crusty, mushroom head nodded rapidly.

"Have you seen him today?"

"Yeh." The head nodded again.

"Where!" Amherst grasped the green, scaled shoulder. The Nympos waved an arm vaguely toward the outskirts of the farm, to the bare rock wall where the farm ended.

"Where?" Amherst shook the native's shoulder excitedly.

"In lucht phulph."

"In locked valve," Amherst shouted. "Of course. It's the only place he could be."

AT that moment, far down the farm, almost where the rock wall began, a stream of water shot heavily to the earth. "That's the one," Amherst cried. "That valve was just opened to the outside. Carol," he cried as he started running toward the water, "get me a vacuum suit and bring it here—quickly!"

When he reached the spot, the water had thinned to a narrow stream. Evidently ebb was over. A mound of crec-earth beneath the pipe opening showed how Scaler had managed to reach his hiding place. Through the slanting man-sized aqueduct, Amherst could see light from above. Undoubtedly Scaler had just escaped. Probably knowledge that the Nymus farmer had seen him, had made him aware of the danger of hiding there longer.

However, it was impossible to follow until Carol returned with the vacuum suit. He waited impatiently, comforting himself with the thought that Scaler could not get very far in the torrents of the afterflood on foot, and that, as no one had been above ground since the flood started, there was no hipp tethered outside to carry him. As relief for his impatience, Amherst piled more cree on the mound Scaler had left. It would save time when Carol arrived with the suit if he could raise himself easily to the opening in the rock ceiling.

At last Carol, clad in a vacuum suit herself, came running across the field.

"You can't come," Amherst told her. Hurriedly he stepped into the garment she handed him. Without replying she stood watching him draw his long body through the pipe opening.

Creeping up the slanting hundred yard aqueduct as quickly as possible, Amherst emerged dripping to the wet Ganymedian surface. A few seconds later, Carol appeared.

"Go back." He was trying to free his sillicellu visor of the mud it had gathered on the ascent through the wet pipe. Scaler was not in sight.

A rocket ship, however, was visible in the sky. He started walking, Carol beside him. Scaler might easily be in the valley on the other side of the hill.

"What's that ship doing?" Carol asked. "It can't land here."

"It looks as if it's going to."

True, the ship was coming lower. A mile or so in front of them, it lost altitude rapidly. Wonderingly, they watched it, knowing no rocket ship had ever landed in the muddy areas of Ganymede until, straining their eyes, they saw a ladder unfurling from its fuselage. So that was going to be the manner of Scaler's escape!

Amherst started to run, splashing through the water and mudholes which slowed his progress. Carol followed, gaping with the exertion of pulling herself in the heavy suit through the sticky mud.

Hopelessly, they saw the ship dip behind the brow of the hill, to rise a second later with a black dot clinging to its downflung ladder. As they watched disconsolately, the red speck soared high in the sky. Red! The color of the space ships of Io! For, since the signing of the Interplanetary Peace Treaty, each planet colored its space ships differently. There was no doubt now where their formula was going.

Carol sat down despondently. For a few moments neither spoke. At last they rose and, silently, started to walk toward the village of the cree gatherers.

"What was the formula, Carol?" Amherst asked finally. "As long as Scaler is taking it to Ionian Products, I might as well know."

"It was simple," the girl said. "It merely duplicated the chemical changes taking place in the moss after the passing of the flood. The color change in cree is due to ammonia in the air, as you know. Well, part of the medicinal value lies there and part in latent eggs deposited in the moss. Father's formula was exactly that: an equal mixture of blue gallnuts and ammonia."

BOB Amherst stopped abruptly. "Gallnuts, did you say? Blue gallnuts?"

Yes. It's the name given the vegetable excrescence which forms around the egg of the gall-ant. We breed gallants, pulverize their eggs and—"

"Carol!" Amherst pounded his knee in delight. "We're saved! Much good our formula will do them." He waved

toward Io, ghostlike in the pale sky.

"Why? They've got the cree on Io."

"They've got the cree all right, and they've got the formula—but they haven't got the ants! And they'll never get them either. Gall-ants can't live in methane—I remember that from Biology—and the air on Io is mostly methane!"

"Why can't they?"

"Because their systems are geared to breathing ammoniated air—exactly the opposite of methanated air. Don't you see? Ammonia is a base; methane is a hydrocarbon, an acid."

"Well, can't they make ammonia?"

"Of course. But where will they get the ants? Gall-ants breed only on Ganymede, in Ganymedian cree. To get the ants they'd have to buy our cree and, inasmuch as they'd have to use the ant eggs to get the gallnuts to make the formula to turn their cree blue," Amherst drew a long breath, "the ants couldn't reproduce. So they'd have to continue buying our cree to get the ants to get the nuts to get—"

"I see," Carol interrupted. "Never mind the rest."

"Besides which," Amherst continued, "even after they succeeded in turning the cree blue—if they suc-

ceeded, which they wouldn't, inasmuch as we wouldn't sell them the cree to get the ants to get the nuts and so forth—they'd have to keep the methanated air of Io away from it. Otherwise it would turn red again. Think what that means: hundreds of bales of cree vacuum-packed to shield them from contact with the outside air. It would raise the cost of production so enormously, they couldn't compete with us anyway."

"I guess you're trying to say they can't use the formula. Anyway, I'm relieved," Carol sighed.

"So am I—for another reason, though."

"What other reason is there?"

"That it was only the formula Scaler wanted after all."

"What do you mean, only?" She turned to face him before the smooth, round dome of the trading station.

"For awhile I thought it was you."

"Oh that," Carol scuffed one foot on the ground. "Yes, he wanted me too. I refused him."

"But why? You seemed to like him well enough at first."

"I did," she said slowly, "at first. It was that kiss changed my mind—that rough one."

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The robot, thrusting back a swift tentacle, sent Marlin staggering to the wall

The COSMIC HISS

By **EDMOND HAMILTON**

Author of "Space Mirror," "Power Pit 13," etc.

NED MARLIN sat hunched so tensely over the lamplit table that he did not hear the door of the laboratory opening stealthily in the darkness behind him. His attention was focused on the apparatus before him, a compact short-wave radio receiver. From it came a steady flow of flutelike notes—messages from far off across the starry cosmos!

The young physicist's clean-cut dark face was taut with eager emotion, his

black eyes burning with excitement, as his pencil swiftly recorded that cryptic code. Beside the table loomed a grotesque, octopuslike metal machine, nearly completed. And Ned Marlin was tonight receiving the final instructions for its completion—from teachers unthinkably distant from earth.

Marlin heard a soft step behind him, but engrossed in transcribing the flute-like notes, he did not turn his head.

"Come on in, Biff," he called excit-

edly over his shoulder. "I'll explain in a moment why I asked you to come over here tonight. I'm almost through here."

"You are through now, Marlin," rasped a high emotion-laden voice.

Marlin spun startledly around in his chair. His eyes narrowed. The man behind him was not Biff Jones, the friend whom he had asked by telephone to come to his workshop here in the university building. This man who had just entered the laboratory was over middle age, thin, with iron-gray hair and a pale, contorted face and burning gray eyes. He held a revolver, aimed at Marlin's heart.

"Doctor Faylor!" the young physicist exclaimed, getting hastily to his feet. The flutelike notes of the radio had just ceased.

"Yes—and I think I have got here just in time," the older man jerked. His face twitched with uncontrollable emotion. But the hand that held the gun was steady as a rock. Faylor's burning gray eyes glanced beyond the young physicist, at the looming, octopuslike machine beside the table.

"So you kept on building it, as They told you to," he murmured. "And it is almost finished. But you will never finish it, Ned. I am going to destroy it, now."

"You couldn't do that!" Ned Marlin exclaimed. "You couldn't wreck this great experiment we started together, just because you have some vague, baseless fears."

"My fears are *not* baseless!" Doctor Francis Faylor said passionately. "I tell you, as I told you before, that this communication with Them, the alien creatures of another star and world, may lead to undreamed of disaster! They're too damned eager to get in touch with us."

"That's why I begged you to break off the communication that we established with Them," Faylor continued. "That's why I didn't want to go any farther with this machine They were teaching us to build. As I told you then, I'm afraid of Them, afraid of whatever hidden motive They have in establishing this communication with Earth."

"Yes, you told me all that before,"

Marlin said impatiently, "and I still think you're just frightened of nothing. Good Lord, They are intelligent creatures, even though They aren't human. Why should you suppose their plans are sinister? They're merely trying to establish friendly communication with our race."

"No, Ned!" Doctor Faylor's voice was hoarse in its intensity. "They are not friendly—they couldn't be! Creatures wholly dissimilar in physical and psychic makeup could not feel real friendliness for an alien race like man. They have some sinister motive in establishing this communication—some motive we can't understand."

"I don't believe it," Ned Marlin said angrily. "I believe two intelligent races, no matter how dissimilar they are, can meet in friendship. And even if They weren't friendly, what possible harm can They do to us through mere radio communication? I thrashed this all out with you before—and I'm going on communicating with Them."

DOCTOR FAYLOR shook his head, the pistol in his hand unwavering.

"No, I won't allow it. I'm convinced They mean a danger to earth, and I'm going to halt this communication with Them. I'm going to destroy your radio receiver, and that mechanism which They have been teaching you how to build."

Marlin tried to temporize with the older man.

"What good will that do Doctor Faylor?" he demanded. "I'll simply build another receiver, and get into contact with Them again."

"No, you won't, Ned," said the other softly. "For I am going to kill you, to prevent that. I'm sorry, but it is necessary. You endanger all Earth by continuing this work, and so you must die."

Ned Marlin saw the other's trigger finger contracting. He knew that in a moment a red-hot chunk of lead would tear into his breast and end his life. But it was not his own life that he was thinking of at this desperate moment.

It was the experiment, the great achievement that would now be lost forever to science. And all because of

a single man's half-crazed fears! Bitter despair clouded Marlin's soul, made him tense desperately for a leap that he knew would be stopped by the roaring pistol.

Abruptly the door behind Faylor swung open. Marlin glimpsed the squat, brawny figure of Biff Jones in the opening. Doctor Faylor turned startledly for an instant as the door opened. It was a heaven-sent opportunity. Ned Marvin dived for the older man's legs in a flying tackle.

Faylor whirled around, and his gun cracked. But the bullet passed over Marlin's head. Then the older scientist crashed to the floor as the other's hurtling body struck him. They struggled fiercely together, while Biff Jones stared stupefiedly from the door.

The struggle was over in a moment. Faylor swung the gun he held in a stunning blow against Marlin's skull. The young physicist felt skyrockets go off inside his head. He vaguely saw Faylor leaping up to his feet, then saw Biff Jones rush forward and grab for the man's pistol. Jones got the gun—and Faylor burst out of the door, to escape.

And then everything was dim and unreal inside Ned Marlin's brain. After a few moments he became conscious that he was sitting in a chair and realized that Biff Jones held water to his lips.

"All right—I'm all right," Marlin muttered thickly. "Doctor Faylor—"

"The gray-haired guy with the gun?" Jones said. "He got away from me. Why the devil was he trying to kill you, Ned?"

There was utter amazement in every line of Biff Jones' rugged, belligerent face. He looked down at his friend, scratching his red head, a puzzled question in his blue eyes.

Marlin's brain was clearing now, though his head still ached badly. He looked quickly toward the radio receiver and the enigmatic machine beside the table. Neither had been damaged.

"He didn't have time to smash them any," Ned Marlin muttered to himself. "Though it was a damn' close call."

"Will you tell me what this is all about?" Biff Jones demanded again.

"Was it a stickup?"

"No—but Faylor must be a little crazy," Marlin rasped. "He's brooded over some vague fears of his for so long that he's now willing to commit murder because of them."

"I don't get it," Jones frowned. "What's the guy afraid of, that makes him want to murder you?"

"Francis Faylor," Marlin told him, "is one of my colleagues in the physics department here. About a year ago, he and I started research together on one of the most puzzling phenomena in the field of cosmic radiation. We set out to discover the secret of the mysterious 'cosmic hiss.'"

BIFF JONES was plainly puzzled. "What the devil is the 'cosmic hiss'?" he demanded. "I never heard of it."

"I'm not surprised at that," Ned Marlin replied sourly. "You're a good football coach and a swell pal, Biff, but you know as much about science as a heathen does about Sunday School."

"That's not answering my question," Jones declared indignantly.

Ned Marlin's eyes swung toward the compact radio on the table. His expression was deeply thoughtful as he explained.

"The 'cosmic hiss,'" he said, "is the name scientists have given a peculiar stream of radio impulses coming from a fixed point outside the solar system, a point far off amid the stars of the Milky Way. An experimenter named Karl G. Jansky, of the Bell Telephone Laboratories, discovered these impulses several years ago. He heard them on a wave-length of fourteen and six-tenth meters, or twenty thousand six hundred kilocycles. He ascertained they came from a point in the galaxy about eighteen hours right ascension, declination twenty degrees."

"That means a lot to me," said Biff Jones disgustedly. "What I want to know is, what did they find out was causing these radio signals?"

"They didn't find out," Ned Marlin answered patiently. "Since its discovery, the 'cosmic hiss' has remained one of the biggest enigmas of science."

He pulled a book off a shelf and

opened it.

"This is Watson Davis' 'The Advance of Science', published back in nineteen thirty-four. Here's all that was known about the signals at the time Davis wrote." He read:

What generates the cosmic hiss is as yet unknown, just as the origin of the cosmic ray is unknown after many years of research. Perhaps the cosmic hiss is the byproduct of some widespread galactic happening, such as transmutation of mass into light, a mighty murmur of atoms disturbed. Mystics may see in the Milky Way static, messages from intelligent beings on unseen planets of remote stars.

"That," said Ned Marlin, closing the book, "is what Faylor and I studied for a year together, the nature of the 'cosmic hiss'. And we found that Watson Davis' last speculation was right."

"You mean—" Biff Jones' jaw dropped in surprise.

"I mean that the 'cosmic hiss' signals are messages from the intelligent people of some remote star-system," Ned Marlin affirmed. "Faylor and I thought so when we first heard them, and for months we studied them until at last we were able to decipher them."

"Good Lord, you mean you could understand those messages?" Biff Jones cried. "But that's impossible! Creatures of another world would have a language, even ideas, utterly different from ours."

"Yes, but some things on their world would be just the same as here," Marlin pointed out. "They started out by giving us the code signals for all the different chemical elements."

"How could they do that?" the other demanded.

"Simple enough. An atom of hydrogen has just so many electrons and other sub-atomic particles in it, no matter whether it's hydrogen here or at the other end of the universe. Therefore, when They ticked off that number of dots, and followed it by a code signal, that signal meant hydrogen. The same with all the other elements. Once we knew the signals for the elements, it was easy to learn the signals for compounds. Thus gradually we built up a vocabulary until we could understand their carefully simplified messages."

"What did They tell you? What

kind of people are They—people like us?" Biff Jones asked excitedly.

Ned Marlin frowned. "They told little about themselves but we gathered that They are of an order of life completely alien to ours. They've concentrated on sending instructions to build that machine, which They say will make communication between us clearer."

HE pointed to the bulky, octopus-like mechanism that stood beside the table. Biff Jones gazed at it in awe.

"We had just started to build the machine under their instructions," Marlin continued resentfully, "when Faylor began to get fearful. He had become unnerved by our communication with non-human beings, I guess. And he had got an idea into his head that they must be secretly inimical to us, that creatures so different from men must necessarily have hostile intentions toward mankind. He wanted to drop the whole experiment, stop building the machine and break off all communication with Them."

Marlin's eyes snapped. "I refused, of course! I tried to reassure Faylor; I pointed out that They are obviously intelligent and friendly, and that even if They weren't friendly, there was nothing They could do to harm Earth, since They are so utterly far away. Communication with Them by radio could not possibly do us any harm, and we might learn much. But Faylor, obsessed with his apprehensions, insisted I give the whole thing up. When I still refused, he came here tonight, so crazed with his unreasonable fears that he was willing to kill me to halt my communication with Them."

Biff Jones stared at the big, mysterious mechanism with its eight tentacles. There was wonder on his rugged face.

"You built that—under their direction? What is the thing?"

"I don't know yet," Ned Marlin admitted. "I gather that it's some kind of television apparatus, but I'm not sure."

"But you built it—you surely must know!"

"No, I don't," Marlin denied. "You could teach a Hottentot how to wind

coils and make a motor, if you took long enough, but he still wouldn't have any idea of the purpose of what he built. And I've an idea that compared to Them, I rank about Hottentot stature mentally."

Then Ned Marlin's dark eyes glowed eagerly. "But I'll soon know what the machine is for, Biff. That's why I asked you over tonight—I'm on the verge of completing the thing; and wanted someone here for a witness. Tonight, I was just receiving the last instructions for finishing the machine when Faylor interrupted, as I wrote down the last signals."

Biff Jones stared at the enigmatic mechanism with its eight tentacle-like metal arms, wonder written on his rugged face.

"Lord," he muttered, "if it's a television set—if you can actually see that other world when you finish it—"

"We'll soon know," Marlin declared. "I'm going ahead now and finish it."

Biff Jones watched with wide, wondering eyes as the young physicist eagerly started work, fitting last pieces of copper and platinum into the mechanism, making connections, fastening bolts. When at last he straightened, the machine seemed complete in appearance, except that an oblong cavity yawned in the steel central "head" of it.

"Now just one more thing," Ned Marlin said tensely.

He disconnected the short-wave radio receiver and placed it down inside the big, hollow "head." He quickly made connection with wires inside the octopus-machine, and then stepped back.

"It's done," he muttered tensely.

"But why put the radio receiver in it?" Jones asked.

"I haven't any idea why," the young physicist confessed. "As I told you, I'm working completely in the dark on this thing. I know that They instructed me to put in batteries, I suppose to operate the receiver. Damn' queer batteries they were, too."

"It must be some kind of television set, just as I figured," Biff Jones declared. "That's why—"

JONES stopped suddenly, stiffening. And Ned Marlin's form had

stiffened, too. The faces of both men froze in unbelieving wonder. For before their eyes, in the shadowy laboratory, a miracle was taking place. A thing incredible.

The octopus-machine was stirring! Moving its tentacular, flexible metal limbs. As they watched in frozen awe, they saw the machine reach up a tentacle and tighten a bolt that Marlin had forgot.

"Good God, the thing's alive!" Biff Jones exclaimed hoarsely, his blue eyes bulging.

The machine had begun to move about the laboratory. Softly it glided here and there around the room on its eight tentacular limbs, examining everything in the room, touching, probing. They could hear a thin humming sound from inside it. It was horribly like a metal octopus come to life.

"It's a robot!" breathed Ned Marlin, staring almost wildly at his own creation. "A robot controlled by Them, from across the universe, by means of short-wave radio impulses."

"The thing gives me the creeps!" Biff Jones declared shakenly.

The robot, ignoring the two staring men, was silently and efficiently assembling pieces of metal and wire and chemicals from the mass of materials in the laboratory. It started to work with these materials, its eight tentacles flashing bewilderingly yet unerringly amid the litter of heterogeneous objects. It was beginning to assemble a round metal framework.

"Building something!" Jones gasped. "This is the greatest moment in the history of science!" Ned Marlin declared, his eyes flashing. "This machine is their representative on Earth now. Just think of what we may be able to learn from Them, through it!"

Then Marlin's enthusiastic face lost its eagerness, his eyes narrowed a little, as he observed the metal frame that was being swiftly assembled by the humming robot's tentacles.

"Why—why, it's building another robot, like itself!" he exclaimed astoundedly.

"Ned, I don't like this," Biff Jones declared uneasily. "There's something creepy about that thing. And you still don't know what it's doing—what

orders They have given it."

"You may be right," Marlin muttered. "I'm going to stop it from doing anything more, until I find out just what it is doing."

He stepped toward the silent, busy robot. The machine, controlled from far across the universe, was working as assuredly and unerringly as though it could see. Marlin comprehended suddenly that the thing must have some sense similar to sight, some televised power of vision by which the creatures far across space could direct its movements.

That feeling of uneasiness grew stronger in him. He did not want any more robots built, until he knew their purpose. He reached out, to take from the machine the framework it was assembling.

The robot thrust him back! With a flash of a swift tentacle, it sent him staggering against the wall. It loomed, tentacles raised threateningly. And from the mindless metal thing came a swift succession of flutelike notes.

"Signals!" Ned Marlin exclaimed, steadying himself. "They are talking to me, through the robot—"

He listened intently, as the flute-notes issued from the octopal machine. When they ceased, his face had gone gray.

"Good God!" he exclaimed hoarsely.

"What is it?" Biff Jones demanded anxiously.

"It was a message—a warning—from Them!" Ned Marlin cried. "They intend to build many robots on earth. These first two are to construct two more, and so on until they have hundreds. And then those robots are going to strip Earth of all its radium and highly radioactive ores, and construct a spaceship to take these precious minerals back across space to their world!"

FEAR was in his voice. "They say that if I help Them, aid the robots in this undertaking, They will reward me by imparting tremendous scientific knowledge to me. But if I try to hinder the robots, They'll kill me."

Biff Jones was astounded. "But why in the world do They want radium so badly?"

"I could understand only a part of their signals about that," Marlin said tensely. "But I gathered that They are not a form of life like us, but a kind of life drawing its energies from the decomposition of radioactive matter taken as food into their bodies.

"They have almost exhausted the radioactive 'food' on their world—and They are close to starvation. That is why They have endeavored by means of their constant broadcasts of signals to place robots obedient to their will on as many planets as possible. So that from planets all through the universe, robots will bring shiploads of the precious minerals to Them."

Biff Jones stared, his rugged face incredulous. But the scene before the two men was incredible, also. The octopal metal robot was working swiftly on, and already the second robot was nearing completion. Marlin's face was suddenly haggard and determined as he watched.

"We can't let this go on, Biff!" he declared. "It means all the radium ores looted from Earth—the radioactive minerals upon which millions of people with cancer and other diseases depend for relief. We've got to destroy this thing I was blind enough to build."

"Shall we get help?" Biff Jones asked in a low voice, as though the busy, grotesque robot could understand them.

"No time for that," Marlin rasped. "Within a few minutes there'll be a second robot completed—within an hour there would be a flock of them. We've got to kill the thing—now!"

Softly he picked up a metal bar from the corner of the laboratory. Biff Jones wrenched a short, heavy piece of pipe from a large condensing apparatus.

"Try to smash the head that contains the radio receiver," Marlin said tensely. "Without control from Them, the thing has no life."

In the laboratory, dark except for the pool of light in which the robot was working, it was an unearthly scene as the two young men advanced with up-raised weapons. It was like two humans attacking a metal thing incubated under the stress of a hideous

nightmare.

The robot appeared not to notice their approach. It was bolting together the last sections and plates of the framework of the second robot. Its tentacles, each equipped with a wrench-like clamp at the end, operated with unbelievable rapidity and skill.

"Now!" Ned Marlin shouted, and rushed the last few steps, swinging his heavy bar in a terrific blow at the machine. At the same moment, Biff Jones rushed in from another angle. The robot darted away from them with incredible swiftness, at the very instant their blows were descending.

Marlin's bar had smashed through one of the metal tentacles, which now hung limp and useless. But the other seven arms of the monstrous mechanism were erect, raised menacingly, as it poised in a corner, seeming to regard its two human attackers with almost human calculation.

"Missed!" panted Biff Jones, his rugged face glistening with sudden perspiration.

"The gun!" Ned Marlin cried, suddenly remembering. "The gun you took from Faylor. Use it, Biff!"

JONES hastily drew the revolver and aimed at the bulbous head of the robot, as it poised threateningly. He fired. The bullets sang off the steel plates of the head, without penetrating them. The robot remained undamaged.

"A gun won't hurt it—it doesn't even feel it!" panted Biff Jones. "Hell, nothing will hurt it! Now it's coming at us! Ned, let's get out of here!"

For the humming robot, as though aroused by the pistol fire, was now moving slowly and cautiously toward them, pausing each few moments, its tentacles waving slightly.

"We can't run away!" Marlin explained, his face pale but determined. "If we do, this thing will have constructed a dozen more like it within an hour—and that dozen will have likewise multiplied. It's now or never, if we don't want Earth to be looted of all its radium."

The robot made a sudden rush for Marlin. It moved with the inconceivable swiftness of a tarantula's strike.

But with a desperate sideward leap, Marlin avoided its clutching tentacles. His bar smashed down as he dodged, but the metal creature drew back with blurring speed and avoided the blow.

"We can't hurt it—and it'll get us sooner or later!" Biff Jones groaned. "Damn! If that radio inside it would only go haywire for a minute—"

A lightning expedient flashed across Ned Marlin's brain as Jones' words set an excited train of thought in motion.

"Biff, listen! We've still got a chance to kill the thing. It gets its direction by short-wave radio impulses. If we can set up an interference, jam the ether on those wave-lengths, their control of the robot will be interrupted and we can destroy it easily."

His eyes desperately swept the benches of electric apparatus behind, and fastened upon a mass of coils and transformers.

"I can do it in a few minutes, if you can hold the thing off!" he declared.

"Okay, I'll try to," Biff Jones told him. "For heaven's sake be quick, though."

Marlin turned his back on the menacing robot, and began swiftly linking together coils and transformers to set up a short-wave super-interference. A few minutes was all he needed. Biff Jones stood between Marlin and the robot, brawny form tensed and the pipe in his hands upraised, his eyes glaring at the threatening metal thing.

The robot moved stealthily forward then, and at the catlike approach of the looming mechanism, the hair on Jones' neck bristled in cold horror. Then he saw the machine halt, turn slightly toward Ned Marlin.

It seemed to be watching the young physicist. And Jones knew beyond doubt that by whatever strange faculties it possessed, it was staring at the young scientist, trying to discover what he was doing. And suddenly the robot, or They who controlled it, must have understood Marlin's purpose. For the machine made a sudden mad rush straight toward the physicist.

Biff Jones sprang into its path, halting it, raining terrific blows upon its steel head. He smashed another tentacle, but made no other impression on

the thing. And the other six arms gripped him with irresistible force, and flung him bodily across the laboratory.

Ned Marlin, frantically tying the last of his connections, heard the crash. He did not turn, for he knew that seconds alone remained to him. His hand shot to fasten the last wire of his hastily assembled apparatus—

A metal arm gripped him from behind, tore him away from the bench. He had been just seconds too slow! The bitterness of that knowledge sank into his soul as the robot's other six arms gripped him. Nothing now could stop the monster, or They who directed it, from succeeding in their plans.

THE thing raised the fiercely struggling Ned Marlin aloft in its tentacles, raised him high to dash him down upon the floor and end his life. Marlin, squirming wildly in that remorseless grip, had a momentary glimpse of Biff Jones, lying unconscious across the room. He knew that in a moment he himself would be a broken thing of red pulp.

Then, in that instant before the monster could dash him to pieces, there came a tremendous cataclysm. The floor of the laboratory heaved madly upward and there was a crashing of walls around them as a terrific explosion shattered the whole building.

Ned Marlin found himself hurled amid wreckage and falling plaster to the corner of the shattered laboratory. He was dazed, numbed by the catastrophe. He glimpsed the robot pinned down by a fallen steel beam, its tentacles lifeless, the radio receiver inside it smashed.

Crimson flames were now shooting up through the floor, red fires of destruction that swiftly were roaring though the whole building. Marlin glimpsed Biff Jones' motionless form, covered by fallen plaster. He staggered to his feet and lurched toward his unconscious friend.

He fought through the roaring inferno the laboratory had become, toward a window. He dropped Jones

out into the darkness, then staggered over the sill and dropped to the ground himself. In a moment he had weakly dragged the senseless Biff Jones to a safe distance from the building, which had now become a blazing furnace.

Then—"So you escaped, Ned!" a harsh voice sounded beside him. He turned shakily. It was Doctor Faylor, advancing grimly, his thin face set with ominous purpose.

"Faylor!" Marlin cried hoarsely. "You caused that explosion and fire!"

Faylor nodded shortly. "Yes. I did it, to keep you from carrying on your work with Them further, to destroy both you and your apparatus. I planted a hastily constructed incendiary bomb in the basement just now."

"Thank heaven, you did!" Ned Marlin exclaimed shakenly. "That explosion came just in time. I had built a robot—a thing that was going to kill us, and build others like it to loot the Earth of radium."

He held out a nervous hand to the older man.

"You were right, Faylor—your fears that a wholly alien race must have inimical purposes, were true! I see now that no creatures of different worlds could meet in friendliness, any more than a man and an insect could. But—well, I almost saw it too late!"

Doctor Faylor's face relaxed as he gripped Marlin's hand. The older man's countenance worked with relief.

The laboratory building was now one mass of flame, red fires bursting skyward into the night. The two men, standing beside the unconscious Jones, stared with strange eyes into that roaring furnace in which the robot-slave of Them across the dim void had perished.

Then Faylor raised his head to look southward into the starry sky, to a point between the glittering stars of Sagittarius and the vague constellation Ophiuchus.

"Pray God," he whispered, "that They never find another experimenter to listen to their messages and be tricked into building slaves for Them on Earth. God grant that the mystery of the 'cosmic hiss' remain forever a mystery to the rest of the world."



By J. B. WALTER

FOOD FOR THOUGHT

THE lifetime allotment of food for the average individual amounts to about fifty tons!

To run each pound of average human flesh through the cycle of human life requires the eating and expelling of about seven hundred pounds of food-stuffs. The bulk of this stuff is fuel.

The potential energy of the daily



intake of the average individual amounts to something over 3,000 calories. The body converts a certain proportion of this potential energy into mechanical work, in the cases of athletes sometimes as much as 30 to 40 per cent. This latter figure about equals the mechanical efficiency of the best modern power plants and is about four times as great as the efficiency of the average automobile engine!

THE FLYING COMPASS

HOMING pigeons steer their way home by scientific means!

Homing pigeons have long offered a problem to scientists. By what mechanism are they able to find their way over many miles of unknown ground to their nest? Naturalists have often puzzled over this amazing oddity in Nature.

Thauzies, the zoologist, suggests that homing pigeons are extraordinarily sensitive to variation in Earth's magnetic field. In support of this mag-

netic sensitivity theory? Thauzies reports positive correlation of faulty homing of pigeons with severe magnetic storms. He found that the carrier pigeons released some 200 miles from home in familiar territory were slow in returning, in spite of the fact that the day was bright and calm. It was later learned that sun spot activity, which is associated with magnetic storms, was pronounced on this particular day.

THE MIRACLE OF MOLECULES

YOU can't hide a molecule!

To illustrate the superabundance of molecules and the law of diffusion, scientists make use of the following fact:

Take a tumblerful of water from the sea. If you tagged all the molecules of water therein, theoretically, and returned the water to the sea to be mixed in all the waters of the earth, a fresh tumblerful taken at random, whether in New York or off the coast of China, would still contain some 2,000 of the originally tagged molecules!

OUR MACHINE AGE

THE pioneer inventors of our machine age were taken no more seriously than was Jules Verne!

Benjamin Franklin's early experiments with electricity were ridiculed. Even the learned British Royal Society was unmoved by his carefully prepared notes. Edison's first demonstration of the incandescent electric lamp caused Henry Morton, president of the Stevens Institute of Technology to say, "Everyone acquainted with the subject will recognize it as a conspicuous failure."

Commodore Vanderbilt, a leading railroad man of his time, dismissed George Westinghouse, the inventor of

the airbrake, with the remark that he had no time to waste on fools. The privately organized telegraph companies declined Alexander Graham Bell's offer to sell his telephone for \$100,000. The astute Chauncey Depew confessed that he warned his nephew not to invest \$5,000 in Henry Ford's company because "nothing has come along that can beat the horse and buggy."

So hold on to that perpetual motion invention of yours. There's hope ahead.

CHEMICAL FINGERPRINTS

SCIENCE can fingerprint a chemical!

Any substance of crystalline structure can now be speedily and accurately analyzed, even when the substance is a mixture of two substances whose structures are almost identical.

Every substance in crystalline form has a definite structure differing from



all others, and when X-rays interact with the molecules in this structure, they produce a series of lines on a photographic plate varying in spacing, number, and thickness.

A leading chemical company has devised a satisfactory scheme of utilizing this fact to enable instant identification of different chemicals. The three lines of greatest magnitude in the photograph are called A, B, and C. The distances between the left edge of the photograph and these three lines respectively are determined, and these distances serve as the basis for classification.

The company has already compiled a file of "fingerprints" of over 4,000 substances, and has found the "fingerprinting" of chemicals to be speedy, accurate, and a simple method of determining their compositions.

THE BRAIN'S CHEMICAL MESSENGER

THINK—and .000,000,000,000,001 grams weight are lost!

Every time a thought commands certain nerves in the body to move a



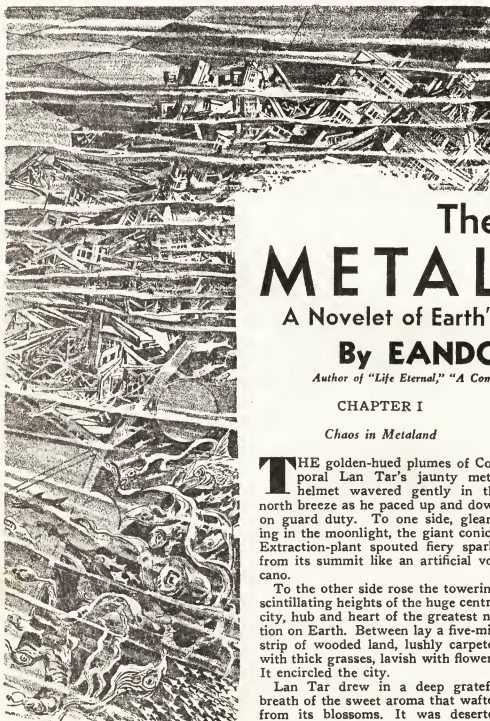
muscle there is released a tiny spurt of a chemical called acetylcholine, which acts as a messenger, giving orders to the muscle from the nerve. Each of these outpourings, which occur hundreds of times a second in the body of an active person, is so small that to express its weight in grams, scientific unit of weight that is one-thirtieth of an ounce, it is necessary to write fourteen naughts to the right of a decimal point before a figure is reached.

That's the discovery that gave Sir Henry Hallett Dale and Professor Otto Lowei the Nobel Prize in medicine for 1937!

THIS INCREDIBLE EARTH

THE pressure at the center of the Earth is estimated to be about three million two hundred thousand atmospheres, or thirty-two times as great as the maximum pressure that has been produced in the laboratory. ... If a nail is driven into a young tree four feet from the ground, the nail will remain four feet from the ground, no matter how tall the tree grows. ... About 250,000 species, or distinct types, of living plants have been discovered and described by botanists. ... A human being normally sheds about 30 hairs a day. ...

Aviators seldom encounter birds 5,000 feet above ground, and few are seen above 3,000 feet except in regions high above sea level. ... Sea Levels are rising at the rate of one foot every twelve years ... due to melting of the polar ice.



The METAL

A Novelet of Earth's

By **EANDO**

Author of "Life Eternal," "A Comet"

CHAPTER I

Chaos in Metaland

THE golden-hued plumes of Corporal Lan Tar's jaunty metal helmet wavered gently in the north breeze as he paced up and down on guard duty. To one side, gleaming in the moonlight, the giant conical Extraction-plant spouted fiery sparks from its summit like an artificial volcano.

To the other side rose the towering, scintillating heights of the huge central city, hub and heart of the greatest nation on Earth. Between lay a five-mile strip of wooded land, lushly carpeted with thick grasses, lavish with flowers. It encircled the city.

Lan Tar drew in a deep grateful breath of the sweet aroma that wafted from its blossoms. It was deserted

of the Greatest Civilization on Earth!



OCEAN

Science Age

BINDER

Passes," etc.



Kar Zim had only a little of the topaz elixir left

the Sea and Welds a Soilless Land

now, at night, but in the daytime thousands from the city wandered through its Elysian beauty. Even now in wartime, for the enemy aircraft could not penetrate past the eternally vigilant defenses at the boundaries of their empire.

And that was what bothered Corporal Lan Tar. Here he was doing meaningless guard duty in a place where the infra-rays of the enemy were never seen. Guarding a city that never had, and never would be attacked! He was young, spirited. He wanted to be at the front-line of defenses where daily the screeching rays and bombs of the enemy buffeted vainly against his country's neutro-screens. He wanted to be in the thick of it, fighting shoulder to shoulder with his fellow soldiers, laughing in the faces of the invaders.

He sighed. Well, at least he was on night patrol. When he had had day patrol here, the women passing him had smiled at his futile pacing up and down. They had left their children play around him, as though he represented the safest spot in the land. When he had strained his eyes into the sky, almost praying to sight a hawk-shaped enemy craft that never appeared, the women had laughed. What was he looking for, they asked—rain?

Even now, Lan Tar fumed. Nothing ever happened here. Of course, there had been the time daring pirates had broken through from Below. They had pillaged a gold-vault and almost escaped. But that had been on the other side of the city, of course, and all Lan Tar knew of it was the recital of events the next day.

CORPORAL LAN TAR varied the course of his beat, tiring of the steady pacing over hard metal. He circled to the edge of the woodland strip. His sandals crunched on dirt. What a different feeling it was! He wondered how it would be to live in the land of the enemy, where *all* was dirt and ground underneath. Where the woodland areas around and in cities were part of the natural scene and not artificially constructed replicas!

How strange! For Lan Tar had lived all his life on a "land" of metal. And simply *Metaland* was its name. Hard, smooth, even metal that stretched for almost two thousand miles in every direction from this central point. All their cities were built on this metallic floor. All their millions of people were born, lived, and died on it. And Below was the water, the ocean, a hundred feet under!

For five thousand years it had been so—a "continent" as stable and natural to them as were the true continents to the east, west and south to their inhabitants. In fact, what was the difference? The natural continents between oceans; the metal continent upon an ocean. It was merely a matter of outlook.

To Lan Tar, and most of his fellow citizens, his environment seemed much more natural than that of the enemy. He thought of them abstractly as animal-like barbarians roaming through primeval jungles.

Lan Tar understood little of what amazing scientific applications made possible his smooth-running civilization on metal. It had all been taken as a matter of course. The huge metal plate whose area was greater than that of North America had been built out by squares on a system of pontoons. The engineers of five thousand years before had planned carefully and well.

When a square was finished, permanent hollow drums of tremendous size and buoyancy were fitted underneath. Each square was joined to its adjacent ones with an intricate metallic mesh that allowed for the curvature of earth and some slight stretching and shrinking from changes in temperature. It had been a simple matter of adding squares until the artificial continent had crowded to the very shores of other lands. Then it lay nestled between North and South America, Europe and Africa, a new land!

The amounts of metal necessary to build this five-foot thick metal land had come from an inexhaustible source—the underlying ocean itself. The giant Extraction-plants threw down sediments from daily billions of gallons of sea-water. Every known metal

was there, in limitless amounts. An alloy had been devised so resistant to the corrosive hand of air, water and time that it might conceivably last for an age.

The staggering powers needed for these stupendous labors came from the atom. In fact, atomic-power alone had made the project possible. It did not take much more than the annihilation of scraps of matter to run the giant power plants that dotted Metaland.

Thus manipulating nature's storehouses of energy and matter, man had bridged the natural barrier of ocean and welded a new world that stretched from Asia's outermost tip to that same point in one unbroken expanse of solid underfooting.

BUT man was not so successful in welding his own social differences. Two thousand years after the completion of the land-bridge, events made a mockery of this solidarity. The colonists of the metal land gradually grew apart from the other lands. They evolved a culture of their own. A different set of values, in their different environment.

There was the time, when synthetic food manufactured from elements of the air replaced naturally grown foods, that rebellion came against dictation from absentee overlords. There was secession, war, finally independence. The new nation was named Metaland.

Thereafter, a full-fledged nation among other nations, Metaland had its quota of wars. . . .

Corporal Lan Tar turned fretfully in his pacing, dreaming hopefully of the day when he might be transferred to the scenes of action in the war, so that he would not have to stride up and down like an animated stick, guarding shadows.

A breath of heat fanned his forehead. For a hopeful moment he glanced in the sky, to see if there might be an audacious enemy squadron that had broken through the lines. Nothing was visible in the clear, silvery moonlight.

He decided it was his imagination, stalked on mechanically.

Again came a blast of heated air. This time it was unmistakable. Where was it coming from? Lan Tar stopped and eyed the sky narrowly. At his signal a thousand searchlights would stab into being, illuminate the night-sky with the brilliance of day. Ten thousand gun-crews would jump to their posts, ready to hurtle death into the skies.

"By heaven!" he swore fervently. "If only—"

Something caught the corner of his eye, pulled his face down. A dull red glow came from somewhere ahead. Lan Tar leaped forward, wondering. The red glow sharpened, outlining a circular portion of the metal-ground roughly ten feet in diameter. Even as he approached, the glow became yellowish and a blast of heat fumed past him.

An infra-ray from above! They had come! They were attacking! With a yelp of joy, Lan Tar stopped and jerked at his belt. Fumblingly, cursing himself for his own butter-fingered excitement, he pressed the alarm-button on a little black box he held. He pressed until his knuckles cracked. He heard the slight rustle that announced his signal-beam's operation.

It would contact him with Headquarters, in the city.

At last he heard a sharp click. A voice, half growling, issued from the little box.

"Captain Dor Ven. Who calls?"

"Corporal Lan Tar! Sector 23-V, north. Enemy attacking! Infra-ray coming down here. Probably adjusting range."

"Are you sure?" barked the voice from the box, skeptically.

"Yes, Captain! A hundred feet away from me the ground has become white-hot! The enemy's ray is causing that!"

"Good Lord, the impossible has happened!" But there was a lilt of joy in the officer's voice too at this chance to see action. "Stay at your post, Corporal! I'll send out a general alarm!" The voice clicked off.

"Stay at my post!" muttered Corporal Lan Tar. "Now my part's done. All I can do is watch while the lucky chaps at the guns go to it."

STILL mumbling sourly, he watched the infra-ray rapidly run up the temperature of its target spot. He was driven back by a withering wave of heat.

Suddenly night turned into day around the gigantic city as a flood of searchlights swept the sky. Up and up they pierced, seeking the enemy. Lan Tar, staring, gasped. There was not a ship there. The sky was clear! He stared confusedly at the blazing ten-foot circle of fusing metal. There must be at least one ship up there, training down its invisible beam!

But there wasn't. And Lan Tar did not guess the answer until the ten-foot piece of metal ground had finally fallen out below. A second later a terrific bubbling hiss told of the plunge of the molten mass into icy ocean waters. Steam came up out of the hole formed. Something like a huge steel hand came up from Below then and clamped vice-like to the radiant edges of the hole.

Lan Tar waited until he saw the first spiked helmet emerge from the hole as its owner climbed up the ladder. One of the enemy, of course! With his right hand, Lan Tar fired his gun and grinned at the surprised look on the man's face as he tumbled back with a scorched gaping black hole through his chest.

With his left hand, Lan Tar pressed the button of his sono-box, waited for the click.

"Attack from Below!" he shouted into it. "Send out ground troops. They're coming up like rats—"

"We'll get 'em!" came from the box.

Lan Tar threw it away, jerked out his other pistol, firing with his first. Another spiked helmet tumbled back to a watery grave. Then another—and another. Lan Tar strode forward, aiming deliberately. But now another ladder came into place, and the enemy began climbing up in a second stream.

Lan Tar got ten more of them before they touched him. A searing shot took off his ear. He shook his head and went on. Another charge charred the left side of his ribs. Smiling like a demon, Lan Tar staggered on, firing blindly. The next shot sizzled his brain within its case. But Corporal

Lan Tar died happy. Something had happened. . . .

CHAPTER II

Ultimatum

THE full significance of what was happening could not have been guessed by Lan Tar, however.

In the gem-studded Rose Room of the palace, Dal Vor, constitutional ruler of all Metaland, was having tea. It was the custom in Metaland to arise before dawn. With him were his daughter, Veä, and Kar Zim, chief scientist.

"A great scientific achievement, Mr. Leader," Kar Zim was saying, nibbling at a wafer with his old toothless gums. "I have worked at the problem for twenty years, off and on. Look!" He held up a vial sparkling with a topaz fluid. "Ten drops in one's veins and—"

An insistent buzzing interrupted and the old scientist relapsed into annoyed silence. Veä reached over to the wall to snap the visi-plate on. A thousand colored specks danced aimlessly across the frosted screen. Finally they coalesced to form the tanned, whiskered face of fierce old Commander Mar Jol.

"Attack has come, Leader!" he cried.

"What!" gasped Dal Vor. "Not this city—"

The commander nodded.

"They attacked from Below. Stole a trick from the pirates. Their submarine fleet must have sneaked through our lines at North Point, through the iceberg jam. Now they're here, boring up with infra-rays and pouring out troops around the city like rats out of holes. The fools, to think they can get anywhere! Our crack city-guards are already engaging them, beating them back. And I've given orders for our submarine cordon to close in and corner them down Below. We'll exterminate them like vermin!"

"Good!" exclaimed Dal Vor, relaxing after the first shock of the news. "But this is so unexpected. It's sheer suicide on their part. Torrang knows that. What made him do it?"

"Part of a big drive," grated the commander. "Just an hour ago they simultaneously attacked our air-lines from the east and west. They haven't broken through and never will. They also landed troops at South Fort, trying to push past our best land fortress. Torrang has gone crazy!"

"Desperation!" mused Dal Vor. "A concerted drive with all he has. And his last, for after this attempt he'll be broken, powerless. Torrang has played right into our hands. Commander, here's your chance. Don't fail—smash them once and for all!"

The commander's scarred face twisted in a sardonic smile.

"I'll give those devils the worst licking in history!" He saluted and faded from the screen.

"And then," murmured Dal Vor, with a sudden blaze in his eyes, "our democracy will come into its own!"

"Is there any danger," asked Veal, trembling a bit, "of victory going—the other way?"

"I think not!" declared her father. He stepped to the wall of buttons and pressed the first two. The giant wall-screen burst into spangled hues that sharpened suddenly into a picture of battle. It was an aerial view of the fighting around the city, from the palace's highest spire. As Dal Vor slowly turned a dial, the views shifted.

EVERYWHERE the spike-helmeted invaders were being driven back toward the holes from which they had ascended, from Below. Their surprise attack had availed little. The plume-helmeted defenders were marching forward relentlessly. From the city's gun-nests, sharpshooters were picking off the enemy steadily. The loss of life for the enemy was terrific.

All over it was the same. Dal Vor tuned in, from an observation plane, the aerial battle far out on their western shore. Incredible hordes of the enemy fleet smashed themselves vainly against the forces of Metaland. At the eastern front, burning ships rained down into the sea like a meteor swarm. At South Fort the great pyro-cannon whiffed the marching enemy to

charred, quivering embers.

Dal Vor could not tune in anything from the lightless Below. But he knew that down there, in the darkness, Metaland's tremendous fleet of submarines was swiftly closing in on the marauders. If there were any survivors from the battle, they would not escape from Below. Torrang had sent his men to doom.

Dal Vor snapped off the visi-plate suddenly, seeing the look of horror in his daughter's eyes.

"It is not good to watch such scenes," he said. Then he sat down and turned to Kar Zim. "Now, what were you saying?"

The old scientist had watched the war scenes with a dispassionate eye.

"Wars come and wars go," he said calmly. He held up the vial again with its iridescent topaz liquid. "Suspended animation! This elixir was distilled from spores that were found embedded deathlessly in a meteorite dating from a million years ago! It has the power to suspend all operations of life, so that they do not advance toward death. Ten drops in the human organism and the body will be preserved, if kept in a dark, dry place. Preserved, I say, and indefinitely. Sunlight and air bring revival, as with the spores. An important achievement—"

"Yes, perhaps," said Dal Vor in a preoccupied tone, still thinking of the war. "But of what use is it?"

"What use?" Zar Kim stroked his gray hair reflectively. "That is beside the point. We scientists seek knowledge for its own sake. Sometimes the things we discover are useful. Sometimes not. But—"

Again he was interrupted by the buzz-signal. This time it was the amazed, half-awed face of the palace's central operator.

"Mr. Leader!" he stuttered. "Torrang wishes to speak with you!"

"Torrang!" gasped Dal Vor. Then he recovered himself and snapped, "Connect him!"

After a minute's delay, while the long distance contact was completed, the visi-plate displayed the visage of Torrang. Cold, unwinking eyes, thin, flaring nose, compressed lips, angular

jutting chin—Torrang. The emotionless, granite features of a man wielding autocratic sway.

SILENTLY, the two men looked at one another, eyes locked. Absolute dictator and democratic leader. Two irreconcilable human forces, waging a bitter struggle for supremacy. Torrang ruled all the land area of Earth, by sheer force of brutality and might. He wanted to have Metaland under his thumb also. Yet Metaland, of recent centuries the stronghold of higher civilization, had successfully resisted his ten-year campaign.

"Greetings, Mr. Leader!" said Torrang in his incisive voice.

"What do you want, Torrang?" asked Dal Vor bluntly. Not since the war had started had they spoken directly to one another like this.

"Nothing," said the dictator, "except to tell you that this is my hour!"

Dal Vor laughed.

"With your forces being defeated in the air, on the ground and in the water?"

Torrang smiled enigmatically.

"You still refuse, I suppose, to let your daughter marry my son, thus welding our two lands?"

Dal Vor put an arm around Vea protectively.

"That is exactly the difference between our two ideologies, Torrang. My daughter doesn't want to marry your son, doesn't love him, never will. My democratic principles do not allow force to influence the free choice of individuals, in that and in all other things. Whereas, in your conception, all things must be done for the good of the state, or, more frankly, yourself. But you will never rule Metaland, Torrang!"

The dictator's eyes glittered.

"If not, I pronounce your doom!" He went on in the taut silence. "What do you think this has all meant, this futile attack? Nothing more than camouflage! Particularly to concentrate attention at your city. Most of your submarine fleet has converged, to destroy mine. But only a few of my ships are there. The rest are scattered all around Below. They are ready with

their most powerful infra-rays. At a given signal, they will puncture the buoys nearest them that uphold you and your metal land. Our engineers have calculated that if one out of ten is destroyed, it will be enough to sink your entire continent!"

His voice became triumphant. "What is your choice, Mr. Leader? Unconditional surrender — or — the other!"

"It's a trick!" gasped Dal Vor, but he sensed differently. The diabolical scheme fitted in too neatly with the suicidal attack that had no other reasonable explanation.

"I'll give you ten seconds to decide!" boomed the dictator, proving that he wanted no choice. "Surrender—yes or no!"

"No!" roared back Dal Vor instantly. "Now and forever! no!"

CHAPTER III

The Three Sleepers

TORRANG gave a mock sigh. His face turned away momentarily as he gave the signal. Then he looked again at the trio.

"My ships are now doing their work, burning holes in the nearest buoys. I will watch your faces blanch when you feel your underfooting sinking. It won't take long!"

It was true. The inconceivable weight of the continental floor of metal, no longer sufficiently buoyed, promptly sank, pushing the remaining air-drums down with it. At the first tremor, Vea flew into her father's arms. Dal Vor's eyes had grown bleak and dull.

"You may live if you wish," spoke the dictator's image. "My squadrons have orders to shoot down any who try to escape your doomed land. But I can arrange to send a ship to pick you up. My son will gladly welcome Vea—and I, you—in our palace!"

"Vea and I will go down with our people!" said Dal Vor quietly. He stared full into the eyes of the dictator. "Torrang, your soul, if you have one, will never know peace in all eternity!"

Five thousand years of a greater civilization than Earth has ever known—destroyed in one moment!" He snapped off the screen, and the leering face of the destroyer of Metaland vanished from view.

Vea sobbed in her father's arms. A moment later they were clutching for support as the floor seemed to dip away from their feet. Vibrations ran through the metal walls from unnatural strains that were being born Below. There had always been subtle vibrations from the pounding of the waves against the drums, but these were new forces, fearfully ominous.

"How can it all end, this wonderful world we know?" cried Vea. "Isn't there any way to stop it?"

"None!" whispered Dal Vor. "It has always been known that such a fate could be ours, and our submarine fleet has been diligent through the years. But this time we were boldly, childishly tricked—and there is no hope."

Old Kar Zim had stood by silently, dazed at what had come about. He almost lost his balance as the surroundings swayed strangely. He was clutching Dal Vor's arm now.

"But perhaps—" he began. "Come to my laboratory!"

"Why?" said Dal Vor hopelessly. "There is nothing that can interest me in the face of this—"

"You must come!" pleaded the scientist.

"You—you have a way of saving Metaland?" queried Vea breathlessly.

Old Kar Zim's eyes narrowed strangely.

"Yes!" he mumbled. "Come!"

Dal Vor hesitated no longer, hope in his haggard face. Kar Zim led the way to his laboratory, which was an adjunct to the palace building. They hurried along, reeling constantly, while the walls swayed dangerously. As they emerged into open air along balconies and winding stairs, the panic-stricken city lay before them. Shrieking, fear-crazed people were trampling one another in the streets, deserting their homes.

At the edges of the overcrowded pedestrian spans, pressure of numbers forced many of the civilians off, to drop

hundreds of feet to sickening death. At the nearby airport, overloaded aircraft lifted groaningly into the air and then fell back, converting their human occupants into a tangled, broken heap.

VEA wept at the terrible sight. Dal Vor bit his lips until blood dripped from his chin. It was all Kar Zim could do to drag them along. Some of the people below caught sight of them and shouted up imploringly, as though their honored Leader must know a way to save them. He paused for a moment.

Old Kar Zim clutched his arm frantically.

"There is no time to be lost!" Soon the water—"

They stumbled down a circular stair, crossed an enclosed courtyard, and stopped before the locked door of Kar Zim's laboratory. It was a hemispherical structure, solidly built of continuous metal without a seam. Its outer surface was dulled and stained from age, but not corroded. It was the same alloy as their metal land, adamant to the forces of nature.

Kar Zim fumbled with a queer lock of sensitive tumblers while Dal Vor fretted impatiently. The door swung open and they lurched in. Dal Vor took a swift glance around. It was much the same as before, filled with the paraphernalia of the student of science. As the door closed behind them with a sucking sound, the visitors were startled to note how abruptly outside noises were cut off. Not the faintest murmur of the exterior bedlam came through.

"You do not know the history of this place," said Kar Zim. His weak voice echoed almost thunderously from the thick walls. "It was built as a caisson for workers, during the time the original metal floor was built—five thousand years ago! It was made strong enough to withstand terrific pressures—even those existing at the bottom of the ocean—so that if by accident the flooring sank, the workers would live in here until it rescued."

"Don't stand there uttering brainless talk at a time like this!" snapped Dal Vor. "Get busy with whatever you

plan to do to save Metaland. If I can help—" He tore off his resplendent jacket and rolled up his tunic's sleeves.

"And I!" choked Vea, her eyes still horror-filled.

Old Kar Zim bobbed his head.

"Keep an eye on those dials near you. They show the depth of the water level at various parts of Metaland, below the flooring. Meanwhile I—"

He stepped to a strange machine that towered bulkily to the curve of the ceiling. A lever started a deep rumble in its heart. Two large funnels began to make hissing sounds, one with intake of air, the other with ejection.

"Good Lord, hurry!" gasped Dal Vor, watching the water gauges. "The ocean level has crawled up to within twenty feet of the flooring! How does your machine work? What does it do?"

Kar Zim shook his head.

"I cannot explain its operation in such a short time. Just watch the readings."

"Fifteen feet!" Dal Vor called a little later.

An eternity passed.

"Ten feet! Kar Zim, is it working —"

"Hush!" said Vea. "He is doing all he can."

Underneath them the metal flooring was groaning in its depths as titanic forces began to operate through its continental expanse. Any other metal but this inconceivably tough one would have long ago been torn to shreds.

"Five feet!" groaned Dal Vor. "Kar Zim, in another five minutes—"

"I know!" croaked the old scientist. His hands flew busily over his machine. Its hum changed at times from light to heavy, as though it were periodically wrestling with an unaccustomed overload.

"One foot!" whispered Dal Vor huskily not long afterward. "Some parts of Metaland, in fact, are already at the ocean level! Kar Zim—"

AN agonized silence came over them. Dal Vor rushed over to the visi-plate and snapped it on. He attuned to the view from the palace tower outside. The streets were strangely

quiet. Millions of people were kneeling, some with faces uplifted, others with faces down. It was a strange, awesome sight. A people, faced with doom, finally accepting the inevitable without a qualm. All over Metaland it must be the same—calmness in the face of sure death.

"Look at them!" said Dal Vor proudly. "My people! Even this catastrophe cannot bow their spirit! Tor-rang's slaves would have been insane before this." Then his tones became anguished as trickles of water snaked their way among the people. "Kar Zim, in the name of the eternal, you must hurry!"

Suddenly, in the scene, a tremendous fountain of sea water shot up from the distant background. Soon a dozen, then a hundred geysers of spuming liquid surrounded the city. It was the ocean water, forced up between the woven metal interstices separating this square and the four surrounding. In the streets, the water rapidly covered the metal-floor and began to crawl steadily upward. The land was sinking—sinking—

The people still waited in motionless calm. Some plunged themselves flat and took the quicker end. Others slowly arose from their knees, to prolong life as long as possible. On the crowded spans and balconies, hundreds of figures hurtled downward with despairing cries.

Suddenly the television scene sputtered and flicked out, as the power station itself became flooded with water.

Dal Vor turned.

"Kar Zim—you—" He stopped, staring at the scientist. His face turned livid. "Kar Zim—you have been deceiving us—"

The old man nodded slowly.

"I had to keep you here, so I said I would save Metaland," he said softly. "Actually, this machine does no more than purify the air in this independent caisson-chamber. It runs on its own atomic-power generator."

Dal Vor's eyes glowed with fervor as he stepped toward the old scientist.

"I should have died out there with my people!" he said in a ghastly monotone. "You have tricked me, lied to

me, robbed me of my rightful death—"

Vea grabbed her father's arm, trying to hold him back, but he shook her off and reached for the old scientist. At that moment a terrific shock beat through the walls of the chamber, knocking them all off their feet. It had been the falling weight of untold tons of angry, seething water. In the next few minutes, further concussions tossed them about as though they were bags of straw.

Finally it quieted down and the three bruised humans were able to get to their feet. The madness had died from Dal Vor's eyes.

"You shouldn't have done it, Kar Zim," he said quietly. "But too late now. If escaping with our paltry lives was your idea, we might just as well have taken off in a plane."

"Yes, but then Torrang would have hounded us down, as he probably has those few who did get away in aircraft," reminded Vea practically.

KAR ZIM laughed, harshly. "We are safer here than anywhere above. Torrang did not realize it, but he will soon find out that he too is doomed. *He and all others living on Earth!*"

"What!" gasped Dal Vor.

"His engineers figured out that puncturing one buoy in ten would sink Metaland, but they forgot to compute the amount of water Metaland will displace when it is completely sunk. It will be enough to send a mile-high tidal wave over every land on earth! It will tear down all cities and destroy all lives by its very violence.

"And when the waters finally recede—leaving the land once more clear since it will still be above the average ocean level—Earth will be barren of civilization. Barren perhaps of all life save a few survivors in the highest mountain regions who will be starving, maddened beasts in all but form, and whose children will be savages!"

Dal Vor's dazed mind took this news almost with a quiver.

"Then Torrang unknowingly destroyed ten thousand years of slow, hard-won civilization and advancement, in his lust for power—"

Silence fell upon the three. Outside they could hear a vague rustle, but it was the crashing and roaring of endless tons of ocean water rushing past.

Kar Zim glanced at his dials.

"We are now two thousand feet below ocean level. Any moment we will be freed and—if we are lucky—rise again."

But an hour later he faced about worriedly.

"A mile down! Surely Metaland will break up! It can't be that strong! When it breaks up, some pieces will go up, some down. Those with enough buoys to lift them will go up. If we are lucky, as I said, we will be with such a piece. If not—"

They glanced silently at him, understanding.

"We have an air supply for a month or so," the scientist continued. "Food too. But after that—"

They slept fitfully as hour after hour the gauges showed a steady drop. Twelve hours later, a slight bump registered through the floor.

"We are at the bottom, about six miles down!" announced Kar Zim with an amazed light in his eye. "And Metaland did not break up! I know because I have sent atomic-signals through the floor and they outlined for me the original extent. Think of it, this tremendously resilient flooring bending, and following the curve of the ocean floor, for over three thousand miles in both directions! Truly, the builders did not know how well they wrought!"

"Are any others alive besides us in sunken Metaland?" inquired Vea hopefully.

"No," said Kar Zim. "This is the only one of the original caissons left. All other buildings and structures of Metaland have undoubtedly been crushed and ground to bits. Their debris must be settling down now to Metaland's floor, or some of it floating up on the surface, where also float —" But he stopped, not daring to voice the thought.

☉ Dal Vor came out of a deep trance.

"Well," he said wearily, "we might just as well be floating up there too. A month more and we die—like rats—"

"Perhaps Metaland will yet break up," mumbled Kar Zim. But to himself he added—"But it won't if it hasn't already."

THEY lived in a tomblike silence. Their atomic-power machine gave them air, light and food. All their former life seemed a dream. At the end of a week, creeping madness shone in Dal Vor's eyes. Kar Zim debated within himself and finally made a silent decision. While the Leader was sleeping, he suddenly jabbed a hypodermic needle into his still arm and pushed the plunger down in one quick movement.

"What was that?" demanded Dal Vor, awakening in bewilderment.

"My suspended animation fluid," said the old scientist calmly. "With this in our veins we may live in suspension for an indefinite period, without air or food. If, some time in the future, our present tomb arises to the surface, we will come to life. A selenium-lock will open the chamber at the first ray of sunshine. Air and warmth will awaken us. It is our only recourse now."

Vea smiled wanly at him.

"You scientists don't know the meaning of defeat. Here, inject me!"

Kar Zim had just enough of the topaz elixir to inoculate the girl and himself.

"Good-by!" croaked the old scientist finally. "We shall either be alive in some future time, or pass into death unknowingly."

Mumbling vague curses at the fantastic hopes of the scientist, Dal Vor went back to sleep. He did not awaken again. His breathing gradually lessened, died away. A little later, Kar Zim and Vea lay unbreathing also. Three hearts beat slower and slower and finally stopped in mid-stroke. Three bodies radiated away their heat and became cold and stiff, seemingly lifeless. But they did not die. The elixir in their veins clung tenaciously to the spark of life, in some way that the spores which could traverse the depths of space and bloom again had learned. Silent and cold they lay. But not dead—not dead.

CHAPTER IV

Out of the Depths

VEA, youngest of the three and more virile, awoke first. A ray of sunshine dazzled her eyes, making them blink. They felt weak, as though they weren't used to light. Suddenly remembering, she sprang to her feet. The door was open and outside she saw a strange sight that took her breath away. It was compounded of familiar things and unfamiliar things.

She saw the even metal flooring of their land stretching unbroken to all horizons. That was familiar. But heaped up on it in tumbled piles were metal and stone debris, remains of their former city. That was unfamiliar. It spoke aloud of the titanic holocaust of water that had smashed their buildings to pieces after the television screen had gone blank.

But how long ago? When had all that happened? Suddenly frightened at the thought, Vea ran back and shook her father, crying for him to awake. He stirred and moaned. His chest heaved in huge inhalations, absorbing the fresh air that swept in through the door which had opened true to Kar Zim's prediction. Finally Dal Vor opened his eyes, filled with mucus, and stared blankly.

"Father, we're alive!" sobbed the girl. "Metaland rose again—look—"

Between them they revived the old scientist. He staggered to the door immediately and looked out. Then he ran back to his machines and started engines that had been turned off some indefinite time in the past, but which were still serviceable. He manipulated dials. Finally he turned.

"All Metaland arose!" he announced. "I can think of only one explanation. The puncturing of one out of ten buoys which Torrang managed was enough to sink Metaland. But barely! There were still nine out of ten buoys left. They were built strongly, surviving the deep-sea pressures. In the meantime, the ocean water kept on fulfilling its endless duties—dissolving

matter into its bulk. Gradually its mean density increased. Finally it was enough to make up that slight difference which caused Metaland to sink, and it rose again, buoyed by water now denser and capable of floating Metaland with one-tenth of its buoys destroyed!"

Kar Zim went on with the rapture of a scientist finding the answer to a puzzling enigma.

"Metaland was resilient enough, because of its web-work connections between squares, to withstand all the buffeting it received. It was able to give and thus render harmless the more powerful blows. It sank as one and rose as one. The metal itself is practically undestructible. Thus it rides the sea again, as capably as before. However, before any cities or extensive masses are built on it again, more buoys will have to be added, to be safe."

"You're talking far ahead," smiled Dal Vor. He went on soberly. "And by your own words, all civilization is gone on Earth—destroyed. Metaland went down like a scuttled ship. It arises now like a skeleton. Perhaps we three are the only ones—" He stopped, dismayed at his own conjecture.

KAR ZIM'S old eyes narrowed queerly.

"Perhaps not!" he said softly. "Look at those nearest piles of debris. See the seaweed, now drying, that once grew among its cracks? Metaland has been down a long time. In fact, for the ocean to increase its density by the slow, infinite process of eroding coastlines must have taken—an age!"

The other two gasped.

"And in an age, however long it may happen to have been," he resumed quietly, "civilization may have sprung up again! There must have been a few survivors, whose descendants struggled up from savagery—"

"Look!" Vea pointed in the sky.

A winged craft was coming down, in a faltering fashion. Its motor coughed hollowly, then died. The strange craft seemed about to plummet to a crashing death, but righted suddenly.

"Civilization!" breathed Kar Zim in

satisfaction. "It sounded like a primitive gas-motor, but still that is a sign of some mechanical advancement."

They watched breathlessly as the unknown pilot fought his stubborn ship and landed finally, narrowly missing a crash into a scattered heap of building shards. The three ran forward to meet this representative of a later civilization.

When they arrived, a young man was slowly climbing out of the cabin. Spying them, he pushed back goggles and flying helmet and peered wonderingly. The three from Metaland stopped before him. Staring at them, taking them in from head to toe the stranger scratched his head, then swept an arm around and spoke strange syllables.

"Try your telepathy on him, Kar Zim," urged Dal Vor. "You were an expert in it."

Kar Zim nodded and stepped close to the young man, staring hypnotically into his eyes. After about a minute, the young man's eyes grew dreamy and his thoughts came to the scientist.

After some time, Kar Zim turned to his fidgeting companions.

"He is of a new civilization all right," explained the scientist. "But he is utterly baffled and astounded at the rise of Metaland. He was making a lone flight over the ocean when his motor went bad and he was faced with possible death. Then, he says, he saw the ocean waters bubble and churn for as far as he could see. Finally, when Metaland came up, he could hardly believe his eyes. It was simply incredible to him—he thinks it is still some hallucination of his mind."

THE scientist smiled.

"But it saved his life to be able to land here, so he says he isn't sorry at all! When I told him that Metaland extends across the entire ocean, he gasped. He murmured something about water-going ships being beached high and dry. He says he saw one, a gigantic liner, lying on its side a few miles to the north, with people strolling around it, probably as amazed as he. I draw from all this that this age is so

(Concluded on page 128)



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and
OF JOVIAN BUILD
A Short Story by
OSCAR J. FRIEND

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So we want our readers to share in our pride in announcing the new sister magazine—**STARTLING STORIES!**

The first issue of **STARTLING**

STORIES, which will be on display at all newsstands in a few weeks, features **THE BLACK FLAME**, a complete book-length novel of The Land-of-Time-to-Come. It's by **STANLEY G. WEINBAUM**, one of science fiction's greatest authors. **THE BLACK FLAME** represents Weinbaum at his best. If you've never before read anything by this author, we know you'll be captivated by his rich, imaginative style, his ability in creating a suspense-packed plot. **THE BLACK FLAME** is profusely illustrated by Wesso.

In addition to short stories by other leading authors, **STARTLING STORIES** presents a sensational array of science features. There's Jack Binder's new illustrated feature, **THEY CHANGED THE WORLD!** The life of the world's greatest mathematician, Albert Einstein, is dramatized in picture form in the first of this series.

THRILLS IN SCIENCE

Next, there's the brand-new department, **THRILLS IN SCIENCE**, which revives epoch-making events in the lives of great scientists. In these episodes behind the scenes with Earth's brilliant scientists you'll find the most amazing facts ever recorded.

Then there's **SCIENTIFCTION'S HALL OF FAME**, in which appear the great stories of ten years ago. You'll be thrilled by the science fiction writings of a decade ago . . . the stories acclaimed by an earlier generation of science fiction enthusiasts. Only one such story will appear in each issue.

If you're a **SCIENCE QUIZ** fan, we know you'll like our new brain-teaser department: **THE SCIENTIFIC CROSS-WORD PUZZLE**. Test your skill on this feature and let us know how you make out.

And that isn't all. There are other new features and stories in **STARTLING STORIES** that we haven't space to tell you about. Reserve your copy now with your nearest news-dealer. We're anxious to have your reactions on the new magazine, so mail them in promptly to the editor. Any suggestions you may care to offer will be appreciated!

JOIN THE LEAGUE

Join the **SCIENCE FICTION LEAGUE!** It's a live-wire organization of science fiction's most ardent followers. Members get together, have debates of a scientific nature, and correspond with one another.

Just fill out the membership application provided on this page. There are active members and chapters in every part of the globe.

To obtain a **FREE** certificate of membership, tear off the name-strip of the cover of this magazine, so that the date and the title of the magazine show, and send it to **SCIENCE FICTION LEAGUE**, enclosing a self-addressed, stamped envelope.

An attractive membership card, suitable in size to fit your wallet, together with a list of the membership rules, will be sent to you.

SCIENTIFICONTEST

What's the matter with you science fiction followers? Several months ago we announced a contest for the

APPLICATION FOR MEMBERSHIP

SCIENCE FICTION LEAGUE

Science Fiction League,
22 W. 48th St., New York, N. Y.

I wish to apply for membership in the **SCIENCE FICTION LEAGUE**. I pledge myself to abide by all rules and regulations.

Name
(Print Legibly)

Address

City

State Age.....

Occupation Hobby.....

I am enclosing a stamped, self-addressed envelope and the name-strip from the cover of this magazine (tear off name-strip so that the name **THRILLING WONDER STORIES** and the date can be seen). You will send me my membership certificate and a list of rules promptly. (Foreign readers must send an International Reply Coupon, or American stamps, with their applications or they cannot be accepted.)

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best letters on the subject, MY SCIENTIFIC HOBBY. Original covers by popular artist Howard V. Brown were to be the prizes. Letters were not to be less than 1000 words in length, nor longer than 1500. We surely thought there would be a mad scramble for these desirable paintings.

To date, only a few dozen letters have been received. Aren't any of you birds collectors of meteorites? Aren't there some amateur astronomers among our audience who would like to tell others about their hobby? Haven't we any embryo entomologists in our midst? Chemists? Biologists?

We're extending the closing date of the contest until December 15, 1938. Come on, fellows. If you've got a unique scientific hobby, we're sure you'd like to tell the world about it. We'll publish the best letters in future issues of T.W.S., and their authors will receive original covers by Brown, done in oils. So send all information on your unusual scientific hobby to SCIENTIFIC CONTEST EDITOR, THRILLING WONDER STORIES, 22 W. 48th St., New York City, N. Y.

CHAPTER NEWS AND GENERAL ACTIVITIES

LOS ANGELES CHAPTER Meeting of August 4, 1938

Several members rejoined the Science Fiction Association, in Britain. Summer low of only 14. Guest who has been with us for last 2 meetings is A. Ross Kuntz, who has related all attempts to become regular mem 'cause would have to quit in fall for school. (School always spoils everything, doesn't it?) 'Twas suggested by new men, Mike Ellsworth that chapter adopt Coat of Arms, copies which could be given to members by the "Silk & Screen" process of reproduction. Memos were asked to submit ideas at next meeting. Glad to welcome Wilbur Stimson back after weeks of absence.

On Sat. Aug. 6, eight localities went to elite city of Beverly Hills to witness astounding triple feature, composed of *Frankenstein*, *Dracula*, and *Son of Kong!!!* Last rep states all mems doing O.K.

A proposed beach party set for Sat. Aug. 13th is just three days from time of writing and promises to be the time gala for local mems, 16 of which make the party, to be held at home of Wilbur Stimson at Santa Monica. Will report on that next iss.

All members near L. A. (and we have mems coming in from Glendale to the North, Beverly Hills and Sta. Mon to the W., Pasadena and Monrovia to the East, and Hollywood from the No. West) are urged to come to the Little Brown Rm. at Clifton's Café at 7th and B'way on any 1st or 3d Thurs. of the mo. and join the gang, or inquire via post to Sec. T. B. Yerke, 1207 1/2 N. Tamarind Ave., Hollywood or phone F. J. Ackerman, FEderal 2231. Also, sample copy of club's mimeographed publication, IMAGINATION! will be sent to anyone for 10c ppd. by addressing Box 6475, Metropolitan Sta., Los Angeles, Calif. Agreed by many to be "tops" in the scientifantasy fan field. 20 large pages.

TRI-CITY CHAPTER

The seventh meeting of our Chapter was called to order at 8:00 p.m. by Director Dale Hart.

The minutes of the sixth meeting were read by Sect.-Treas. Wilkinson. They were accepted. A roll call disclosed that seven members were present. The three absences were unavoidable; one of them was away at Columbia U.

Short informal addressees were given. After this, a discussion of fan writing and publishing reigned, all members participating. Fan material by those present was read.

Business then began. Whitenton made a motion that the Chapter prepare about fifty sheets advertising our club, said sheets to be placed within all science fiction magazines in this area. (The newsstand proprietors will permit this.) The motion was seconded, and it carried unanimously.

Several new members made arrangements with the Director for joining the League.

Another serious discussion of general nature held away for the rest of the meeting. Many interesting points were brought out.

At 10:30 p.m., the meeting was formally adjourned, and refreshments were served by Whitenton, our host. (This last-named fellow holds a new office recently installed, that of Parliamentarian.)

NOTE: Will all readers of this magazine who live in Baytown, Goose Creek, Pelly, and surrounding cities please communicate with the Director at Box 1361, Highlands, Texas?

CHAPTER NO. 17 LEEDS, ENGLAND

321, Roundhay Road, Harehills, Leeds 8, England

We are glad to take this opportunity of announcing that under the auspices of the Science-Fiction Association (a British organization similar to the S.F.F.L.), several leading British fans and authors have recently collaborated to produce a new fan magazine. It incorporates two previous fan magazines, one of which, SCIENTIFUNCTION, published by Walter H. Gillings, has previously received notice in this column. The other was TOMORROW, a quarterly mimeographed publication of the Science-Fiction Association.

The new magazine, which bears the title "TOMORROW—The Magazine of the Future," and which has as its motto "What is good enough for Today is much too bad for Tomorrow," aims at a world wide circulation, and already has hundreds of subscribers in several different countries. The magazine is printed on good-quality paper, and profusely illustrated with photographs of science-fiction authors, scenes from science-fiction films, drawings of future scenes, etc. (even drawings by Weaso have been featured). Contributors include Prof. A. M. Low, D.Sc., A.C.G.I.; Benson Herbert, M.Sc.; Leslie J. Johnson, Eric Frank Russell, John Russell Fearn, L. O. Evans, Fetus Fragnell, P. E. Cleator, Raymond A. Palmer, Donald A. Wellheim, Neil R. Jones, etc., etc.

The magazine is published quarterly, price 15c per copy (annual subscription, 50 cents). It contains over twice the content of either of its two predecessors. It is edited by Douglas W. F. Mayer, founder of the first overseas chapter of the Science Fiction League, with Walter H. Gillings as Associate Editor.

Any member of the Science Fiction League who wishes to find out what an interesting hobby science-fiction can become, or who wishes to learn more about science-fiction authors and their stories, or about rocketry (P. E. Cleator, the great rocket expert, conducts an up-to-the-minute column on the subject), or about such things as the future, science progress, etc., is advised to write for a specimen copy and full details to the SFA Publications Dept., 20, Hollin Park Rd., Roundhay, LEEDS 8, England.

ANNOUNCEMENT

Mr. Harry Warner, Jr., of 311 Bryan Place, Hagerstown, Maryland, is contemplating the publication of a new fan magazine, SPACEWAYS. Any type of science fiction articles,

(Concluded on page 126)

The Reader Speaks



HOW TO KEEP COOL

By Jack Darrow

Nope, I just can't understand it. "Understand what?" says ye editor. How T.W.S. has remained a bi-monthly with the fine array of stories and illustrations it hands out each issue, says I.

Now take the Oct. issue, for example. It's hot and stuffy at home, so I decides to cool off at the beach. Seeing the latest T.W.S. on my desk I thinks (occasionally a rusty cog wheel does turn a notch in my cranium) why not kill two Martian Chatz birds with one ray gun bolt and take it along? So I flops on the sand under the blazing sun (I went to cool off—remember?), and unmindful of passing people kicking sand on page 14, I started.

"Satellite Five," by Arthur K. Barnes. Lots of human interest in this and also in other stories you publish. Good characterization is just as important in science fiction as elsewhere, but a lot of authors seem to think otherwise. I imagine credit should be given the editor, too, for if a story lacks this fine feature it's up to him to slip the author a rejection note instead of a crisp, new check.

T.W.S. has also found that humor in science fiction is welcome. Tubby and Penton & Blake well help to take care of that. Couldn't you manage to revive the "Hick's Inventions With a Kick" series?

IF, by Jack Binder, is a very welcome feature. It is very well drawn, mature in interest. Schomurg is a fine addition to your art staff.

The companion mag to T.W.S. sounds like a perfect idea. Who wouldn't want to read complete booklength novels by the topnotch science fiction authors?—3847 N. Francisco Ave., Chicago, Ill.

ANTI-SERIALIST

By Miles Eaton

I have been an enthusiastic reader of **THRILLING WONDER STORIES** for the past year, with an occasional copy even

In this department we shall publish your opinions every month. After all, this is **YOUR** magazine, and it is edited for **YOU**. If a story in **THRILLING WONDER STORIES** fails to click with you, it is up to you to let us know about it. We welcome your letters whether they are complimentary or critical—or contain good old-fashioned brickbats! Write regularly! As many of your letters as possible will be printed herein. We cannot undertake to enter into private correspondence.

before, clear back to some of the early issues of the Gernsback regime. I could tell of all my likes and dislikes of the present magazine but the fact remains that I buy the magazine every issue, so I probably am well satisfied.

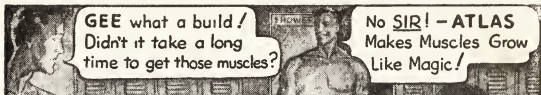
Therefore, I'll dispense with my ideas, as they are probably poor anyhow, and save you from reading a lot of useless words. I would like to take this opportunity to give some of my wishes on the subject and makeup of the coming companion magazine or larger T.W.S. Personally, I am interested in archaeology, ethnology and kindred science. I regret that I haven't seen a single story related to these; and it seems to me that "space travel," the new popular subject, is rapidly approaching a standard plot, where it will soon wear itself out.

Eando Binder has perhaps the most fertile mind of any of the present authors, with Arthur Leo Zagat running a close second. I would suggest that these two each do a novel, if possible; Binder on his theme, "A Comet Passes" theory, and Zagat modeling on "Land Where Time Stood Still." These two stories, I thought, were particularly good.

On the matter of continued stories, I believe that the reason that most readers are against them, is because there are not enough **GOOD** stories in the same issue as the continued one. Most of us save the magazine until we get the complete story, and then read it all at once. Now if we expect to find about two stories in each issue that we don't like at all, and one continued story, out of an average of six stories, for our money that leaves three stories. Usually, with an excellent continued story by a versatile writer, there will be thrown in a larger quantity of poor hastily written stories, which diminishes the enjoyable reading matter to two stories. And that is slim pickin's.

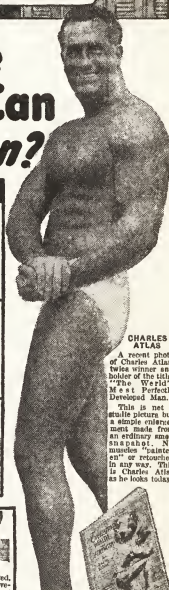
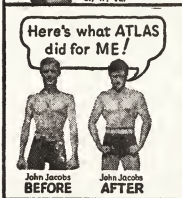
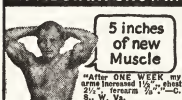
And here is an interesting slant on a science feature department. Call it, "Your Theory and Mine," or something on that order. Each of us, you know, has a pet theory that he likes to discuss or dream about or defend against all comers. My particular daydream is that the Aryan races originally came from the immediate section of the Northeast of the Caspian Sea. Why I believe this, I don't know, but I base some of my conclusions on the remarks of Baird T. Spaulding, in "Teachings of the Masters of the Far East." However, I would like to read the various pet theories of the popular authors and laymen, no matter how wild they are; and read their reasons for assuming same. This also will open up plots for

(Continued on page 118)



Will You Give Me 7 Days to PROVE I Can Make YOU a New Man?

LET ME START SHOWING YOU RESULTS LIKE THESE



CHARLES ATLAS

A recent photo of Charles Atlas, twice winner and holder of the title, "The World's Most Perfectly Developed Man."

This is not a studio picture but a simple enlargement made from an ordinary small snapshot. No muscles "painted on" or retouched in any way. This is Charles Atlas as he looks today!

7-Day TRIAL OFFER

I could fill this whole magazine with enthusiastic reports from OTHERS. But what you want to know is—"What can Atlas do for ME?"

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My FREE BOOK tells about my amazing 7-DAY TRIAL OFFER—an offer no other instructor has ever DARED make! If YOU want smashing strength, big muscles, glowing health—I'll show you results QUICK!

FREE BOOK I myself was once a 97-pound weakling—sickly, half-alive. Then I discovered "Dynamic Tension." And I twice won—against all comers—the title, "The World's Most Perfectly Developed Man!"

I have been using apparatus, "Dynamic Tension" ALONE (right in your own hands) will start new inches of massive power pushing out your chest—build up your shoulders to champion hunkiness—put regular mountain of muscles on your biceps—free you of constipation, pimples—make those stomach muscles of yours hard ridges!

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(Please print or write plainly)

Address.....

City..... State.....

(Continued from page 116)

new stories, which I think are badly needed in the science fiction circle.

Here is another suggestion for an unusual department. If I am not mistaken, there is a German expedition still digging in the Euphrates Valley. Are they finding anything, and if so what? Or maybe it is the British expedition that is still there. I am sure that the average follower of science is interested in all of these queries. I will be reading your opinions of these, in **THRILLING WONDER STORIES**.

As a concluding wish for the new magazine, or bigger T.W.S., I vote for Wesso and none other as illustrator. I hope I have made myself clear on what I would think a science fiction magazine should be, and if you look at this letter carefully, you will find no criticisms of T.W.S., which means that I think it is excellent just as it stands. —10825 N. E. Skidmore St., Portland, Oregon.

QUIZ WIZARD

By Dorothy W. F. Meyer

It should be well enough realized, by now, that most science-fiction authors, instead of being ahead of modern science, as they are supposed to be, in actuality lag years behind. For instance, during the past few years, we have had quite a few stories based on elements No. 85 and 87, and some incredible properties they were supposed to possess—presumably because the authors were still lost in the science of the 1920's, in which these two elements were the missing links in the Periodic Table of 92 elements. They had apparently not caught up with the fact that both elements were discovered and isolated as far back as 1931.

Imagine my surprise, therefore, to read in the answer to the **SCIENCE QUIZ** in the August issue—*factual* answers, remember—that elements 85 and 87 are “the only two undiscovered elements.”

Element 85 was first detected in March, 1931, by two of your own countrymen, Allison and Murphy, of the Alabama Polytechnic Institute. Since the Periodic Table indicated that the new element would fall into the Halogen group of the non-metals Fluorine, Chlorine, Bromine and Iodine, prior to its discovery it bore the name Eka-Iodine. Allison and Murphy, by means of special magneto-optical methods they had devised, detected the element in monazite sand, and, in honor of their state, named it Alabazine. Since then, the chemical properties of the compounds of the element with Lithium and other elements have been investigated, and it is known to occur in such minerals as fluorite, apatite, kainite and in sea-water.

In the same year, Allison and Murphy also detected in monazite sand traces of what they believed was element 87 (“Eka-Caesium”), though it was impossible to confirm this spectroscopically, since the main spectral lines of the element lay in the infrared, and until a reasonably high concentration of the element was obtained, an infrared spectrograph could not be used.

Later in 1931, however, in September, the element was separated by chemical methods from the mineral samarskite, by Papish and Weiner, who christened it Virginium and gave it the symbol Va. More recently, a French scientist has suggested calling it Moldavium, though heaven knows why! Some chemical facts about the new element which Papish and Weiner discovered almost immediately, are that it yields a chloride which volatilizes at 1000°, and that its alum is the least soluble in the alkaline series.

In 1932, the element was detected in low concentration in pollucite, lepidolite, Searle's Lake brine, kainite, and monazite sand. In 1933, an isotope of the element was produced by alpha-ray bombardment. The element itself, of course, is not radio-active, otherwise it would not have defied detection so long, but it may be the residual of atomic disintegration.

So much for 85 and 87. But whilst the lecture is in progress, in the interests of future scientific accuracy I think I had better remind authors and Quiz composers that four other new elements have recently been discovered, with atomic numbers 93, 94, 95 and 96. Ignoring isotopes, the modern chemist has therefore 96 different elements to play about with. None of these four new elements, all of which have an atomic number greater than that of Uranium (92), has been found in Nature, and all have been created by artificial methods—chiefly by bombarding Uranium with very fast neutrons.

Element number 93 (“Eka-Rhenium”) was discovered in 1933 by the Italian scientist Fermi, who intended first of all to call it Mussolinium, in honor of Il Duce, then discovered it had a half-life period of only 13 minutes, so decided not to! It has an atomic weight of about 239, and chemical tests have shown that it is not precipitated with caustic soda, but that it forms an acid oxide.

Element 94 (“Eka-Osmium”) was investigated by Hahn, Meitner and Strassman in 1935. They found it had a half-life period of 100 mins., that it was precipitated with Caustic Soda in the Uranate, but that it was not volatilized with Nitric Acid.

Element 95 (“Eka-Iridium”) and 96 (“Eka-Platinum”) were definitely isolated in 1936, but little is as yet known about them.

And so, for the time being, we end this little review of the March of Science!—20, Hollin Park Rd., Roundhay, Leeds 8, England.

FODDER FOR FILMS

By Jay Watts

Just a line from one of your trans-Atlantic readers. The latest story that I have read in T.W.S., and which I rate as first class, is “Hollywood On the Moon.” Why not try to get Hollywood to film the story? I mean that. If they would take the risk, I'm sure that this stf. film would be a box-office success owing to its originality.

I like the Gerry Carlyle series, and I notice references to her in other stories. T.W.S. has been improving of late. Some of your covers have been rather loud, but the April cover was O.K. Fear is better at the "Mathematica" type than any other kinds of stories. The Binders' "Anton York" should give plenty of scope for good stories as well.

While I think that the best stories now printed are ahead of anything in the past, yet the all-around quality does not seem to be as good as it was in previous years.

England now has several sf. magazines but I am glad to say they can't yet compete with T.W.S.—45 Crescent Rd., Southport, England.

(Gerry Carlyle spurns Hollywood offers. She won't work for the film folk unless she gets Robert Taylor and Clark Gable for her leading men!—Ed.)

SEQUEL SQUAWKER

By Peter Walburne

Oh, baby! What a relief—only one Marchioni illustration in the August issue of your superb magazine. Tell Schomburg that he's tops. Say, that fellow Kummer is good! Don't lose him. I may spoil you with too many orchids so I must put you in your place with a brickbat or two.

"Doom World" was terrible. Why, oh, why must a good story have a sequel? "Life Eternal" left a bad taste in my mouth, as did "Doom World," and "Via Etherline" should have been left alone instead of adding "Via Asteroid" and "Via Death." I agree with a writer in the letter department, Alex Fontaine, I believe is his name. Said he: "Pages of scientific discussion may be interesting to some, but they are just Greek to me."

An article in SCIENTIFACTS for August about the layer of ozone in our atmosphere being the protection against death rays radiated from certain stars, suggests an idea for a story. How about having Binder or Kummer spin a yarn around it?

I'll bet that your October issue will be a horror. No Binder—and then Penton and Blake back! Ugh! I'd prefer ZARNAK to that pair any day. You know, it would be perfectly okay with me if you used just Wesso and Schomburg for inside illustrations. And, why not try Schomburg for cover work? Something tells me that he'll be good. By the way, I think that Kummer's story, "The Exterminators" would make a good movie.

T. Bruce Yerke suggested that someone write a history of the Solar System, from 2000 to 3000 A.D., so that writers of sf. will agree in their ideas, and to make the stories easier "to get into." However, this seems silly to me. Let the authors make up their own history in each story in the manner of Edmond Hamilton, who, in explaining the story behind the story, "Murder in the Void," quoted from Doctor Kobb Alamm's great work, "The History of the

(Continued on page 120)

Arrest Him, Officer!

I'LL HAVE COMPLETE FACTS ON THE OTHER FELLOW TONIGHT!



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(Continued from page 119)

Solar System," published at Vosek, Jupiter, in 1987.

Well as this letter is long, I'll say one more thing. Please make T.W.S. a monthly.

YESTERDAY'S WRITERS TOMORROW?

By Ken G. Chapman

Regarding the latest issue of T.W.S., I have only just begun to read same, owing to the shortage of reading time and the acquisition of some back-numbers of stf. magazines which required my attention. However, that part of the current T.W.S. that I have read has impressed me as distinctly above par. Ed. Hamilton's story, if a trifle on the bloodthirsty side, was certainly an excellently plotted story, and one that kept the interest to the last word. One of those yarns every now and again makes a splendid change from the soberer stf. that seems to be the vogue nowadays, and I trust that you will include further stories of this caliber in later issues.

In John Victor Peterson, you have a writer that can really write. His style is easy and readable, and no matter what he writes, it will always be liked for this very reason. John Victor has already made an impression on the British stf. reading public, if my correspondence is anything to go by, for I am constantly receiving letters of praise for his stories.

This is as far as I have read, up to now, but I would like to comment favorably upon the SCIENCE QUIZ, a department which interested me a lot. I tried myself out on it, and didn't do half as well as I expected—failing in the Meteorology Test by one answer, and only just scraping home on the other two tests. The "Number, Please" section I managed to get correct.

This new department, together with the other excellent ones you have in T.W.S., makes the magazine doubly attractive, and I trust that this side of the publication will continue as it is.

Your illustrations have improved greatly on your earlier issues, now that you have Wesso back, and Morey too. Jack Binder is a great artist, and I would like to see you use more of him. There is a constant shout for Paul, from all quarters, I see, but I personally would prefer that you get Brown to do some interior illustrations. I have a bit of a flare for Howard Brown. Schneeman is also doing better illustrations nowadays, and might be worth watching. Still, your pictures are quite O.K. and perhaps best left alone, after all.

I would like to see some longer stories or serials by the best known authors. How about John Taine? And then I see you mention Gawain Edwards, Charles Cloukey and Bob Olson, etc., in the current editorial. They were all good in the old days—can't you get any of their work today?

Anyway I don't want to criticize a good magazine. You are doing splendidly, but I

do want to see that companion magazine.—59a Tremaine Road, Anerley, London.

LETTERETTE

By Lane Stannard

My congratulations on a superfine issue. It was a masterpiece. I do hope that you can keep it up in future issues. That Campbell yarn was as good as the rest in the series. By all means, let's have more of the same type. Ray Cummings' yarn of our overweight friend was quite good, 100% better than the first yarn he had published in THRILLING WONDER STORIES. Wellman's storiette in the back was A plus. Why not have one in each issue? Only one item spoiled the issue, and that was the cover by Brown. Good idea, but rotten drawing. Am anxiously awaiting that companion magazine.—140 Myrtle Ave., Flushing, New York.

ZAGAT-TALE BEST

By Mark Reinsburg

It seems like T.W.S. has come through again. The cover on the August issue was superb. It reminds me of the good old days when Wonder was large size—and monthly. Yes, that reminds me; when will you go monthly?

The biographies of your authors are very much appreciated. Just between you and me (and the whole wide world) the Carlyle-Quade feud is terrible. The Carlyle side of it isn't any too good—the Quade side is. But the "Green Ray" was really good. I don't believe Zagat has written a better story yet.

I wish that some of the SCIENCE FICTION LEAGUE members living in Chicago would get in touch with me.—430 Surf St., Chicago, Ill.

IS BROWN'S FACE RED!

By Herb Cummings

When I purchased the October, 1938, issue of T.W.S., I was determined to write to you. The cover on that issue was one of the worst that I have ever seen on any sf. magazine. Gerry Carlyle and Nine Planets Films, Inc., are both excellent features, but please, not too much of it, for it is easy for a person to get tired of even the good. I see that "The Exterminators" was rated second in the issue. I did not care for it, but I guess we all have our likes and dislikes.

Your cover for October looked like some of Brown's work. I am putting in a vote for a Morey cover. I think he is an excellent cover artist. Novelets—all good, as were the short stories. My favorite in this issue was "The Brain Pirates," by Campbell, Jr.

Hooray! I see that you had Paul illustrate the science article, "Rambling Through the Solar System." I am glad to see that he is back with you, as undoubtedly are many of your old readers. Speaking of your old readers, where are they? I noticed Doc Lowndes' letter and here's hoping that he keeps it up.

(Continued on page 122)



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(Continued from page 121)

I recently saw your announcement for the companion magazine. I am for it 100%. I hope it is the large size and while on the subject am putting in my wail for a quarterly.—7015 Corbitt Ave., University City, Mo.

COVER-KICKER

By Walter Sullivan

I have been a reader of your magazine for a long time, but this is the first time that I have taken the trouble to write to you. After reading the June issue, I decided that this was as good a time to write as any. I believe that the June issue was the best to date. I especially enjoyed "Terror in Utopia," by Paul Ernst. It is the kind of story that I like and that I will remember for a long time, and sincerely hope that there will be more like it. "Murder in the Void," and "The Dual World" took second place, with "The Reinmuth Rider" not far behind.

"Wings Across the Cosmos" and "Time On My Hands" were both good stories. I am still waiting for another story like "The Brink of Infinity" by Stanley G. Weinbaum. Although I hate mathematics, I still think it one of the best that you have ever published. By all means keep IF and the scientific articles, and please don't drag anything like ZARNAK out again. There is just one more thing that I would like and that is a good cover. Instead of having so many bloody covers, why not some peaceful ones that picture progress?—10146-112 St., Richmond Hill, N. Y.

PERTINENT POINTERS

By Langley Searles

I am writing you to give you my views and opinions on the proposal of publishing a companion magazine for T.W.S. Here they are:

(1) If this proposed magazine is going in for blood-and-thunder invasion stories, I say NO!! By this classification I mean tales whose only claim to their being classed as a stf. story is a ray gun or a space ship. I do not, however, mean to exclude good, well-written fantasy, as that of C. L. Moore. War themes are done too often. Under this heading would come such novelettes as "Lords of 9016" and "The Exterminators."

(2) I do not want to see reprints in this magazine. If readers want to read "The Skylark of Space" or "The Moon Pool" or any other story that has appeared in a stf. magazine, why do they not get in touch with a person who has the magazines in question in his possession, and borrow or buy them? That is the way that I have done in filling out the gaps in my collection.

Nevertheless, there are certain stories that have not been published in stf. magazines, but rather in "Argosy" or some other magazine in 1920, or at some other early date, that are almost impossible to obtain; these could be reprinted without danger of protest

from even a fan of long standing as myself. Examples: Flint and Hall's "The Blind Spot" and some obscure works of Merritt as "Through the Dragon Glass" and perhaps "The Metal Emperor." I, myself, know them as names only.

(3) Whether or not I would like book-length novels in this magazine depends on what percentage of the reading matter they would constitute. If it would mean more than 75% I say no. Otherwise, okay.

I think that that about covers the companion magazine question. You can easily judge from the foregoing symposium whether or not I would support the magazine in the event that you publish it.

Back to T.W.S. I think your special features are very good. IF and SCIENTIFACTS deserve all the praise they have received. I sincerely hope that you will never again publish such unadulterated trash as ZARNAK. Personally, I like well-written fantasy and plenty of it. I literally devoured all of Stanley G. Weinbaum's stories. Gallun, Moore and Williams have turned out some nice pieces of work. Then, too, we have all too few humorous little gems as "Easy Money" turned out. You had the honor that month, in my opinion, of publishing the best short story of any sf. magazine; and combined with the novelet "Hollywood on the Moon" it made April an all-star issue.

Your covers, especially the August one, are inclined to be too flashy. Alex Schomburg did an excellent job on the interior illustrations in the latest issue, by far eclipsing all the others. Incidentally, I might say that I think one science article an issue enough.

In closing, I might remark that I think the magazine has been on a definite upgrade and still is.—19 East 235th St., New York City.

GEMS IN THE PAST

By Jack D. Slater

For the last two years I have been a steady reader of science fiction, and I must say THRILLING WONDER STORIES give the best. Your special departments makes your magazine tops with me. As to serials, please keep them out of T.W.S. While the problem of running the mag is up, why not have a new department for old stories? Some of the stories of ten years ago were real gems. (See announcement of new companion magazine to T.W.S.—Ed.)

In the October issue, I liked "Of Jovian Build" best; "Satellite Five" second, and "Cosmic Teletype" third. "Challenge of Atlantis" was also good.—Seminole, Oklahoma.

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THE STORY BEHIND THE STORY

(Continued from page 13)

the tragic fate of the chameleon who was placed on a piece of Scotch plaid, I kept Picasso only in situations that wouldn't tax his somewhat limited ingenuity.

The stimulant benzedrine sulphate, of course, is in use today, but it's a ticklish drug which should only be administered by a physician.

As for the Inferno—the cavern of the energy storm—Von Zorn insisted that it be filmed. He said it was the only thing in the System Gerry Carlyle couldn't take back to Earth and exhibit in the London Zoo.

THE WEALTH IN THE SEA

Remember the article on the various elements abundant in the sea, discussed in a recent edition of SCIENCE QUESTIONS AND ANSWERS? Well, to most of us that item represented only an interesting fact. But to EANDO BINDER, popular author of science fiction, it spelled a plot. Incidentally, the ending of THE METAL OCEAN packs a wallop . . . we wonder if you can anticipate it. Here goes the inside dope on the yarn.

Although the editor has requested an account of how this story came to be written, I'm going to try my best to say as little as possible, for the benefit of those who read this before the story. There is a certain denouement, which, if revealed before it is read, would detract from the ending, I believe.

The idea of the gigantic metal continent, however, was an outgrowth of an item in Science Questions and Answers which listed the tremendous resources of metals dissolved in the oceans. There at hand lie untold billions of tons of all useful metals. Even radium exists in unbelievable quantities, locked in the overabundant molecules of sea-water.

Although today no process has been worked out for extraction of these water-bound treasures (beyond table-salt as salt and iodine and bromine from kelp) it can be assumed that in the future, when science progresses in such technique, all these metals will be economically recoverable. When that day comes, civilization's metal-supply will be exhaustless. With a slight stretch of the imagination, the metal "continent" takes form, linking the land areas of earth and covering once and for all that barrier of ocean.

A gigantic task, perhaps, but one that could be done with atomic-power and advanced engineering. It is not for one generation to say what the next can or cannot do. The whole problem is bound up with atomic-power, in fact—cheap, endless power not limited by specific fuel supplies. And atomic-power, at the rate physics is forging ahead, may be in the offing.

Having said about as much, or little, as is necessary about the story-idea, I'll end with the hope that the story pleases.

INSECT RULE

The illustration on this month's cover is based on a scene from Will Garth's story, HANDS ACROSS THE VOID. The age-long feud between insects and mankind is developed in an entirely new manner in this story . . . with surprising results. Here's what the author has to say regarding the theme of his tale:

HANDS ACROSS THE VOID is an attempt to give the old giant-ant story a new twist by telling it from the viewpoint of an extra-terrestrial being. I tried to depict the char-

BEST FUN, FICTION AND FOTOS IN

acter of the Titan so that he would be real and understandable while still retaining the necessary alien traits. Further, I wished to give the story emotional as well as scientific and adventure values.

I think that Wells's "War of the Worlds" directly inspired my tale. That novel has always been a favorite of mine, and more than once I wondered what sort of book Wells would have written if he had told his story from the viewpoint of the Martians.

I did not wish to make my protagonist an invincible superman. Such a character, to me, would seem unconvincing. My Titan has his strange weapons, but they can fail, as he, too, nearly fails in his humanitarian mission. In short, I wished to make a Titan a creature neither god nor devil, but a being, if not human, at least more or less real. Such was my intention.

STANLEY G. WEINBAUM

Good things are always saved for the last. Now that you've read **TIDAL MOON**, by Stanley G. and Helen Weinbaum, we know we'll be interested in learning of the genesis of that story... how Helen Weinbaum was able to capture so effectively the fascinating style of her famous brother.

The "story behind the story" of **TIDAL MOON** has little to do with **TIDAL MOON** itself. Rather it goes back to our childhood, Stanley's and mine, to the time when I first added away from my nurse (I was four years younger than he was) to find him digging in the ground, discovering new marvel in a worm, or watching an ant parade, or reading the story of an age-old plant in a petrified rock. But it would start even before that—it would start when first I opened my eyes to see him standing beside my cradle. So, for me, it never started, but always was. Even as a child, I must have sensed his genius, I let him lead me where he would and, listening fascinated to the stories he fabricated for my enjoyment, forgot there was such a thing as other children to be played with. Through the years I followed the intricacies of his mind, absorbing where I could, questioning where I could not, but always taking pleasure in the quickness of his reactions, in his sly humor and in the color his personality gave to the prosaic of subjects.

Always he shared his interests, discussing ideas as he conceived them, rediscovering with fresh enthusiasm a nursery rhyme we had learned as children, inventing strange, new games for us to play.

From there to the story of **TIDAL MOON** is a short step, too short, alas. For, as he gave of his own creativeness, he liked to share that of others, and I followed him, as always, to the reading he enjoyed. So it was that I read science-fiction, and read it at an age when most girls were playing with dolls, enjoying, perhaps, more the pleasure of sharing it with Stanley than the stories themselves, for they must have been far beyond me.

Still, when it was suggested that I complete the story of **TIDAL MOON** from the synopsis and the pages of the story proper he had left, I looked askance. A woman, me, to write science fiction—and more, to complete a story Stanley started? It was sheer impertinence to dream of it! And then the thought occurred to me that perhaps I might do it, that the mere fact of my having been so close to Stanley for so long gave me an advantage. So I started, and when my imagination lagged and my courage failed, I reread **A MARTIAN ODYSSEY** which, possibly because it was his first published story or possibly because he had told me of some of the queer creatures in it before he wrote the story, was my favorite. So, in **TIDAL MOON**, in order to carry over what I little I could, I tried to conceive of creatures similar.

That is the story, and I hope the many readers who went with Stanley to Mars and other planets will not find me superfluous in the world on Ganymede.



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(Concluded from page 114)

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BEST FUN, FICTION AND FOTOS IN

SCIENCE QUESTIONS AND ANSWERS

(Continued from page 115)

of the firmament impossible for Earth to see—where only some three thousand stars are visible to the naked eye. It would be a pyrotechnic glory to take one's breath away.

The following table gives the thirteen stars within eleven light-years of earth:

	Magnitude	Distance (light-years)
Proxima Centauri	10.5	4.16
Alpha Centauri	1.5	4.30
Barnard's Star	9.7	6.06
Wolf 359	13.	8.08
Lalande 21185	7.6	8.31
Sirius	1.6	8.80
B.D.-12* 4523	10.	9.32
Innes' Star	12.	9.58
Kapteyn's Star	9.2	10.3
Tau Ceti	3.5	10.3
Procyon	0.5	10.4
Epsilon Eridani	3.8	10.5
61 Cygni	5.0	10.9

Since the naked eye cannot see less than the sixth magnitude, seven of these thirteen stars are invisible in our skies. They include Sirius, the brightest star, but there are dozens of other bright stars which are much further away than eleven light-years.—Ed.

THE WILSON CLOUD-CHAMBER

I've noticed that with all the recent work in physics, in which they've discovered new particles of matter, the Wilson Cloud-Chamber is always mentioned. What exactly is such an instrument and why is it so important?

G. L.
Hartford, Mass.

The Wilson Cloud-Chamber has rightfully been called the atomic-physicist's right hand. It is as necessary and standard in that line of research as the telescope is in astronomy, or the microscope in biology. It was invented in 1911 by C. T. R. Wilson, who was asked by J. J. Thomson, the discoverer of the electron, if he could obtain photographic proof of the electron's existence.

A large order, but Wilson, an ingenious mechanic, labored for years and finally succeeded. The basic principle of the apparatus is the condensation of water vapor into moisture around small particles. Wilson correctly assumed that if water vapor tended to condense around small dust particles, it would do the same around an electrical particle. He passed electrons through moist air in a sealed chamber fitted with a piston that could suddenly expand the vapor and thus cool it, causing it to condense. Sure enough, his high-speed camera showed the fog-tracks of electrons as they plowed into the vapor and made trails of tiny droplets of water.

Since then, the Cloud-Chamber has been used to photograph the paths of any and all atomic and subatomic particles—alpha particles, protons, positrons, etc. Through this means, the mass, electric charge, velocity and other data have been determined with an almost inconceivable accuracy. Wilson was awarded the Nobel Prize for his great invention.—Ed.

ISOLATION

Which is the most deserted region of Earth, in point of life? Would it be the Sahara Desert, or the Antarctic region?

J. S. B.
Berkeley, Calif.

The Antarctic would take first prize by many lengths. Although much of the Sahara is barren of even cacti, as a whole the region is surprisingly alive. Caravans and desert tribes roam across it from oasis to oasis, and at no time is it as completely deserted as Antarctica is at all times.

(Concluded on page 128)

How to Get a Raise

Many men who were not able to finish school are held down all through life because they lack a good education in the correct use of the English language. Here is how to make it up in only 15 minutes a day.



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BEST FUN, FICTION AND FOTOS IN

(Concluded from page 127)

Antarctica is a continent larger in area than the United States, covering the South Pole, and in that tremendous area no living thing exists, not even a tuft of moss. Nothing can live in those eternal wastes of wind-driven snow and mountains of ice. In the same degree of north latitude, in the Arctic, exist bears, wolves, foxes, rabbits, musk oxen, caribou and Eskimos.

Antarctica's peculiar isolation is the answer. It is land, but completely surrounded by wide oceans. These oceans have piled up an ice barrier on the coasts that hasn't melted down one inch since time immemorial. How can such a land ever become tenanted by life? Penguins have managed to extract an existence at the shores of the continent, living on fish, but they cannot penetrate to the interior where life reaches the absolute zero of its otherwise universal range.—Ed.

THE METAL OCEAN

(Concluded from page 111)

far in the future that even the traditions and legends of Metaland are lost!"

"See if you can find out, somehow, just what day and age this is," urged Dal Vor excitedly. "We ought to know that right away."

"Yes, and ask him what his name is," seconded Vea.

She blushed a little as the two men looked at her.

The old scientist stepped before the young stranger again. He asked a question. Kar Zim obliged by speaking aloud their pronunciation of "Metaland," in their oral language.

"Ought-lawn-tease?" repeated the young man slowly, with a thoughtful frown. He went on in his own language, though the three could not understand. "Say, you wouldn't mean 'Atlantis', would you? Atlantis is supposed to have sunk all right. But good Lord, at least fifteen or twenty thousand years ago! I wonder what you'll think when you find out this is 1939 A.D.!"

Marveling, he told himself it was all a wild dream, all a figment of his imagination from too many staring, storm-tossed hours flying solo over the ocean. But it was a pleasant dream, he reflected, as he caught the eyes of the girl.

They smiled at one another. There was no mystery in that, at least. Around them Metaland—Atlantis—glinted in the bright sunlight.

READ
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ANSWERS TO SCIENCE QUIZ

on Pages 56-57

POSITIVE OR NEGATIVE

- True.
- True.
- False. It's not a coincidence for the moon is the principal cause of the tides.
- True.
- False.
- False. Absolute Zero (minus 273° Centigrade) is the temperature at which bodies would possess no heat whatever. It has never been attained either artificially or naturally.
- True.
- False. The Earth's moon captures this distinction.
- True.
- True.
- True.
- True.
- True. Eclipses occur in periodic intervals, such as the Saros, 18 years, 11½ days (10½ days if there happens to be 5 leap years in the interval).
- False.
- True.
- False.
- True.
- True.
- True.
- False. It's an artificial mnemonic word giving the initials of the colors of the spectrum—violet, indigo, blue, green, yellow, orange, red.

TAKE A LETTER

- d; 2. a; 3. c; 4. d; 5. b; 6. c; 7. b; 8. c; 9. a; 10. a.

CHE-MYSTERY

- | | | |
|------------|------------|--------------|
| 1. acid | 5. colloid | 9. osmosis |
| 2. alkali | 6. crystal | 10. valence |
| 3. enzyme | 7. halogen | 11. molecule |
| 4. ammonia | 8. isotope | 12. catalyst |

MISSING LINKS

- Anaphase. The four stages of mitosis (indirect cell division).
- Heart. The main parts of the circulatory system.
- Pittdown Man. Prehistoric Men.
- Volcano. Dynamic agencies formed by the Earth.
- The satellites. Members of the Solar System.

WHO'S WHO

- 10, 4, 2, 6, 1, 9, 3, 7, 5, 8.

WHAT'S YOUR SCIENCE I.Q.?

After you've completed the SCIENCE QUIZ, and checked your results with the correct answers, get a slide-rule and calculate your score. Here's how you rate:

- 57-62—A Mental Giant.
- 51-56—A Human Encyclopedia.
- 41-50—B.B. (Bachelor of Bookworms).
- 31-40—Below par.
- 0-30—Newton Would Turn in His Grave.

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44x4-40-21	\$2.49	\$1.50	\$1.50	50x4-40-21	\$3.45	\$1.45	\$1.45
46x4-40-21	\$2.49	\$1.50	\$1.50	52x4-40-21	\$3.45	\$1.45	\$1.45
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110x4-40-21	\$2.49	\$1.50	\$1.50	116x4-40-21	\$3.45	\$1.45	\$1.45
112x4-40-21	\$2.49	\$1.50	\$1.50	118x4-40-21	\$3.45	\$1.45	\$1.45
114x4-40-21	\$2.49	\$1.50	\$1.50	120x4-40-21	\$3.45	\$1.45	\$1.45
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126x4-40-21	\$2.49	\$1.50	\$1.50	132x4-40-21	\$3.45	\$1.45	\$1.45
128x4-40-21	\$2.49	\$1.50	\$1.50	134x4-40-21	\$3.45	\$1.45	\$1.45
130x4-40-21	\$2.49	\$1.50	\$1.50	136x4-40-21	\$3.45	\$1.45	\$1.45
132x4-40-21	\$2.49	\$1.50	\$1.50	138x4-40-21	\$3.45	\$1.45	\$1.45
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138x4-40-21	\$2.49	\$1.50	\$1.50	144x4-40-21	\$3.45	\$1.45	\$1.45
140x4-40-21	\$2.49	\$1.50	\$1.50	146x4-40-21	\$3.45	\$1.45	\$1.45
142x4-40-21	\$2.49	\$1.50	\$1.50	148x4-40-21	\$3.45	\$1.45	\$1.45
144x4-40-21	\$2.49	\$1.50	\$1.50	150x4-40-21	\$3.45	\$1.45	\$1.45
146x4-40-21	\$2.49	\$1.50	\$1.50	152x4-40-21	\$3.45	\$1.45	\$1.45
148x4-40-21	\$2.49	\$1.50	\$1.50	154x4-40-21	\$3.45	\$1.45	\$1.45
150x4-40-21	\$2.49	\$1.50	\$1.50	156x4-40-21	\$3.45	\$1.45	\$1.45
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160x4-40-21	\$2.49	\$1.50	\$1.50	166x4-40-21	\$3.45	\$1.45	\$1.45
162x4-40-21	\$2.49	\$1.50	\$1.50	168x4-40-21	\$3.45	\$1.45	\$1.45
164x4-40-21	\$2.49	\$1.50	\$1.50	170x4-40-21	\$3.45	\$1.45	\$1.45
166x4-40-21	\$2.49	\$1.50	\$1.50	172x4-40-21	\$3.45	\$1.45	\$1.45
168x4-40-21	\$2.49	\$1.50	\$1.50	174x4-40-21	\$3.45	\$1.45	\$1.45
170x4-40-21	\$2.49	\$1.50	\$1.50	176x4-40-21	\$3.45	\$1.45	\$1.45
172x4-40-21	\$2.49	\$1.50	\$1.50	178x4-40-21	\$3.45	\$1.45	\$1.45
174x4-40-21	\$2.49	\$1.50	\$1.50	180x4-40-21	\$3.45	\$1.45	\$1.45
176x4-40-21	\$2.49	\$1.50	\$1.50	182x4-40-21	\$3.45	\$1.45	\$1.45
178x4-40-21	\$2.49	\$1.50	\$1.50	184x4-40-21	\$3.45	\$1.45	\$1.45
180x4-40-21	\$2.49	\$1.50	\$1.50	186x4-40-21	\$3.45	\$1.45	\$1.45
182x4-40-21	\$2.49	\$1.50	\$1.50	188x4-40-21	\$3.45	\$1.45	\$1.45
184x4-40-21	\$2.49	\$1.50	\$1.50	190x4-40-21	\$3.45	\$1.45	\$1.45
186x4-40-21	\$2.49	\$1.50	\$1.50	192x4-40-21	\$3.45	\$1.45	\$1.45
188x4-40-21	\$2.49	\$1.50	\$1.50	194x4-40-21	\$3.45	\$1.45	\$1.45
190x4-40-21	\$2.49	\$1.50	\$1.50	196x4-40-21	\$3.45	\$1.45	\$1.45
192x4-40-21	\$2.49	\$1.50	\$1.50	198x4-40-21	\$3.45	\$1.45	\$1.45
194x4-40-21	\$2.49	\$1.50	\$1.50	200x4-40-21	\$3.45	\$1.45	\$1.45
196x4-40-21	\$2.49	\$1.50	\$1.50	202x4-40-21	\$3.45	\$1.45	\$1.45
198x4-40-21	\$2.49	\$1.50	\$1.50	204x4-40-21	\$3.45	\$1.45	\$1.45
200x4-40-21	\$2.49	\$1.50	\$1.50	206x4-40-21	\$3.45	\$1.45	\$1.45
202x4-40-21	\$2.49	\$1.50	\$1.50	208x4-40-21	\$3.45	\$1.45	\$1.45
204x4-40-21	\$2.49	\$1.50	\$1.50	210x4-40-21	\$3.45	\$1.45	\$1.45
206x4-40-21	\$2.49	\$1.50	\$1.50	212x4-40-21	\$3.45	\$1.45	\$1.45
208x4-40-21	\$2.49	\$1.50	\$1.50	214x4-40-21	\$3.45	\$1.45	\$1.45
210x4-40-21	\$2.49	\$1.50	\$1.50	216x4-40-21	\$3.45	\$1.45	\$1.45
212x4-40-21	\$2.49	\$1.50	\$1.50	218x4-40-21	\$3.45	\$1.45	\$1.45
214x4-40-21	\$2.49	\$1.50	\$1.50	220x4-40-21	\$3.45	\$1.45	\$1.45
216x4-40-21	\$2.49	\$1.50	\$1.50	222x4-40-21	\$3.45	\$1.45	\$1.45
218x4-40-21	\$2.49	\$1.50	\$1.50	224x4-40-21	\$3.45	\$1.45	\$1.45
220x4-40-21	\$2.49	\$1.50	\$1.50	226x4-40-21	\$3.45	\$1.45	\$1.45
222x4-40-21	\$2.49	\$1.50	\$1.50	228x4-40-21	\$3.45	\$1.45	\$1.45
224x4-40-21	\$2.49	\$1.50	\$1.50	230x4-40-21	\$3.45	\$1.45	\$1.45
226x4-40-21	\$2.49	\$1.50	\$1.50	232x4-40-21	\$3.45	\$1.45	\$1.45
228x4-40-21	\$2.49	\$1.50	\$1.50	234x4-40-21	\$3.45	\$1.45	\$1.45
230x4-40-21	\$2.49	\$1.50	\$1.50	236x4-40-21	\$3.45	\$1.45	\$1.45
232x4-40-21	\$2.49	\$1.50	\$1.50	238x4-40-21	\$3.45	\$1.45	\$1.45
234x4-40-21	\$2.49	\$1.50	\$1.50	240x4-40-21	\$3.45	\$1.45	\$1.45
236x4-40-21	\$2.49	\$1.50	\$1.50	242x4-40-21	\$3.45	\$1.45	\$1.45
238x4-40-21	\$2.49	\$1.50	\$1.50	244x4-40			

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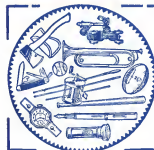
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A detailed blue-toned illustration of various prizes. At the top left is a large baseball glove. Below it is a microscope. To the right of the glove is a baseball. In the center is a long telescope. To the right of the telescope is a clock. Above the clock is a steam engine. At the bottom is a four-wheeled wagon. The prizes are arranged in a cluster, suggesting a collection of rewards.

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YOUR PILES may be

associated with any of these ailments

Piles and rectal disorders are rather common ailments among many men and women over 40—as well as younger people. There is medical authority to the effect that these disorders do not tend to correct themselves, and that self-applied medicines generally afford temporary relief only. ASK yourself then frankly if it is wise to needlessly expose yourself to the ever-present danger that some incurable condition of a malignant nature may develop. For this annoyance, pain, embarrassment and danger is generally needless, *because rectal troubles can usually be corrected with little loss of time and without staying in hospital, or without ether, chloroform or radical surgery.*

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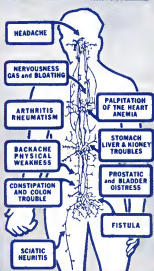
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STUDY THIS CHART



IF YOU suffer from any of the above ailments, do not neglect your rectal trouble. The ailments shown on this chart may be associated with piles or other rectal diseases. Even though your piles or rectal troubles may be in a minor stage—they may be a cause of conditions that are undermining your health. You will find many facts of great interest explained and many questions you will want to ask—answered in the free book. SEND for your FREE copy today.

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